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ABSTRACT

Presented are the findings of a study designed to identify and describe vocational education programs that have been successful in mainstreaming mildly handicapped students (educable mentally retarded, learning disabled, and mildly emotionally disturbed). The structural elements of 30 exemplary programs in six states are described and an optimal organizational model is presented. Among 20 identified exemplary practices are limiting the number of handicapped students in each mainstream class and providing multiple exit points with specific occupational outcomes. Successive chapters focus on the interdisciplinary approach (integrating the expertise of special educators and vocational educators), characteristics of classroom instruction, optimal classroom arrangements, and components of the overall system of education for employment (professional development incentives, vocational assessment and placement, prevocational instruction, work experience, transition services, support services, interprofessional communication, and administrative support). Implications for state and federal policy are detailed in the areas of funding, technical assistance, and evaluation. Among observations in a concluding chapter is that local education agencies must take the major responsibility for improving the ability of vocational education programs to serve mildly handicapped students. An appendix describes data collection methods and units of analysis. (JW)

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IMPROVING THE OPTIONS OF HANDICAPPED STUDENTS IN MAINSTREAM VOCATIONAL EDUCATION

FINAL REPORT

Prepared for:

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ABSTRACT

This report describes the obstacles and opportunities for improving the ability of vocational education programs to serve students with mild learning handicaps (i.e.—mental retardation, learning disabilities, or emotional disturbance). Based on visits to thirty programs that have been succeeding with learning handicapped students, the report makes recommendations about a number of aspects of vocational education, including effective teaching strategies, organization of the vocational curriculum, modified teaching materials, extra classroom assistance, interdepartmental coordination, teacher training, transition services, and administrative support. In addition, the state and federal policy implications are specified in a separate chapter. Most important of all efforts that should be made to improve these programs is the effort to increase the coordination and communication between special educators and vocational educators. These two groups of professionals usually operate with different values, training, and expectations about the learning process. Good programs have bridged these differences to draw on the strengths and expertise of each discipline in designing and implementing vocational programs for learning handicapped students.

Preface

In 1986 the Institute for the Study of Family, Work and Community received a grant from the Office of Special Education and Rehabilitative Services to identify and describe vocational education programs that have been successful in mainstreaming handicapped students. Institute staff visited thirty exemplary programs in six states to answer the following questions:

(1) What are the institutional and programmatic characteristics of vocational education programs that are successful with handicapped students?

(2) What additional resources are needed to increase participation and success of handicapped students in mainstream vocational education?

(3) What do these additional resources cost?

In this report we describe the kind of vocational education programs that work best with mildly learning handicapped students (i.e., learning disabled, educable mentally retarded, or mildly emotionally disturbed). We also discuss some of the obstacles—institutional, financial, and philosophical—that may be encountered when educators try to alter mainstream vocational education programs to better serve handicapped students. Finally, we present recommendations for state and federal policy makers in vocational and special education.

Although the study began with a review of the relevant literature and interviews with state officials, the recommendations of this report are based not on the results of this preliminary work but on the actual experience of professionals in the thirty vocational education programs we visited. Educators in each of these programs has taken major steps to serve handicapped students better, and we learned from every visit. Certain aspects of particular programs we visited are unique, but we found that good programs like these have a great deal in common. In describing a particular approach to serving special needs students in vocational education, we sometimes use one program as an illustration, but in most cases a similar approach is used at another of the programs we visited. The examples have been chosen to illustrate particular ideas rather than to provide a profile of the program in a particular school.

As always with such research, the number of people who contributed to this project far exceeds the space available to thank them. We owe a substantial debt to the teachers and administrators who took time from their demanding schedules to talk with our staff and show us how their programs work. Much credit also goes to L. Allen Phelps and Sheila H. Feichtner for their help. We thank the Office of Special Education and Rehabilitative Services for making this work possible.

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IMPROVING THE OPTIONS OF HANDICAPPED STUDENTS IN MAINSTREAM VOCATIONAL EDUCATION

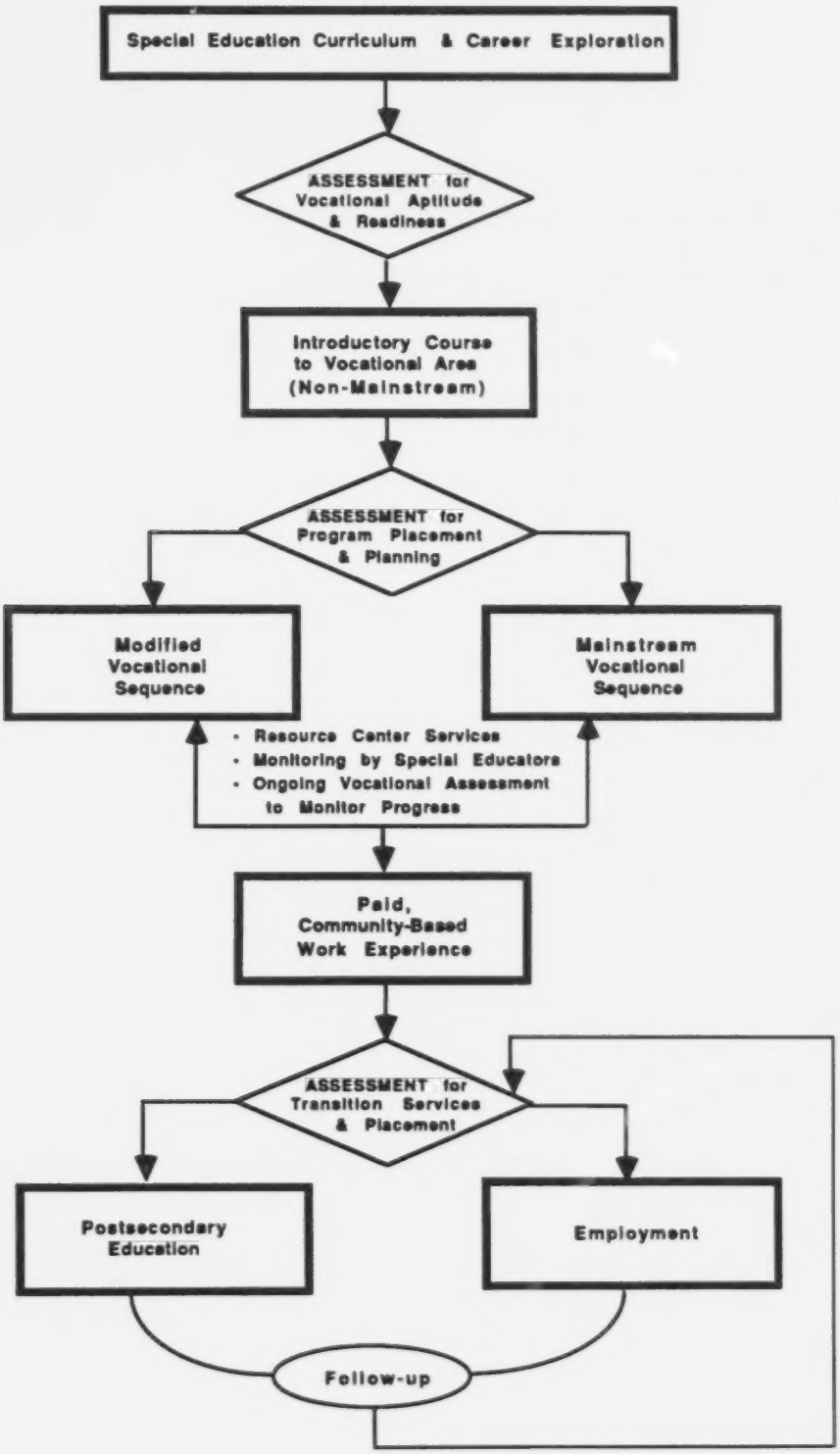
SUMMARY

The participation and success of handicapped students in high quality mainstream vocational education programs is a long-standing concern of federal policy. The recently enacted Carl Perkins Vocational Education Act, like previous federal legislation, continues to set aside ten percent of each state's basic grant for vocational education programs serving students with handicaps. The new law also requires each local education agency to provide information to these students and their parents on opportunities in vocational education. After more than a decade of emphasizing handicapped students' access to vocational education programs, parents and educators have become increasingly concerned with the quality of these programs.

The Institute for the Study of Family, Work and Community obtained a grant from the Office of Special Education and Rehabilitative Services to improve our understanding of the kinds of options now available in vocational education for students with handicaps, and to learn which educational strategies have been most effective. To accomplish this we visited thirty programs in six states during January and February of 1987. These programs had been named by local educators or state officials as particularly effective in using vocational courses to improve the employability of students with mild learning handicaps (i.e.—learning disabled, educable mentally retarded, and mildly emotionally disturbed). These visits permitted us to develop an understanding of how vocational education programs can best serve students with handicaps and to estimate the costs of implementing successful practices in other schools.

Effective programs require close coordination and communication between special educators and vocational educators responsible for the same students. Integrating these two disciplines insures that classroom instruction will meet students' needs and that appropriate support services are provided. Such a program helps assure a suitable level of service to each student in three ways: (1) building bridges from the special education curriculum to the vocational curriculum; (2) offering help from learning specialists to students in vocational classes; and (3) providing both mainstream and non-mainstream alternatives. The optimal organization of the vocational program for mildly handicapped students is pictured on the next page. This diagram shows the temporal and logical relationships between the courses and services which together comprise a vocational program for students with mild learning handicaps.

Successful Vocational Program for Students with Mild Handicaps


Special Education Curriculum & Career Exploration
ASSESSMENT for Vocational Aptitude & Readiness
Introductory Course to Vocational Area (Non-Mainstream)
ASSESSMENT for Program Placement & Planning
Modified Vocational Sequence
Mainstream Vocational Sequence
• Resource Center Services
• Monitoring by Special Educators
• Ongoing Vocational Assessment to Monitor Progress
Paid, Community-Based Work Experience
ASSESSMENT for Transition Services & Placement
Postsecondary Education
Employment
Follow-up

The *structure* of an exemplary program is clear from the diagram above, but there are also certain exemplary *practices* which are necessary to make the elements of such a program work for all students with mild handicaps. The list below does not include all of the practices which are helpful to serving these students in vocational education, but it does include the twenty practices which we observed to be most essential to making exemplary programs work.

- **Emphasize employability skills**
- **Actively encourage mainstreaming**
- **Keep vocational classes small**
- **Offer non-mainstream vocational survey courses**
- **Provide non-mainstream alternatives**
- **Limit the number of handicapped students in each mainstream class**
- **Monitor student progress frequently**
- **Tie instruction & support services to vocational assessment**
- **Use competency-based instruction**
- **Give students individual attention**
- **Use hands on training**
- **Teach academic & social skills for this occupation**
- **Maintain a work-like atmosphere**
- **Provide adequate support services**
- **Provide multiple exit points with specific occupational outcomes**
- **Include community-based, paid work experience in each program**
- **Provide comprehensive exit assessment & placement assistance**
- **Follow up on students & give more transition service if needed**
- **Maintain frequent communication with potential employers**
- **Articulate with postsecondary institutions**
- **Evaluate each program annually, including placement results**
- **Ensure communication between special and vocational educators**

In order to establish and sustain programs based on the model pictured and described here, local education agencies must allocate substantially greater resources to vocational education than they have in the past. In addition, three changes in philosophy are necessary to the success of these programs.

- First, both vocational and special educators must be more committed to mainstreaming. Without this commitment, it is tempting to place most students with handicaps in restrictive environments rather than organizing the kinds of support services that are necessary to their success in the mainstream.

- Second, both special education and vocational educators must be willing to change their approach to mildly handicapped students. Special educators must be more willing to challenge their students, while vocational educators must be more willing to individualize their programs to accommodate students' needs.

- Third, all educators must learn to resist old patterns of thinking about how education is "delivered." Although the individual classroom teacher is extremely important to the quality of vocational education for the student with a handicap, local educators need to recognize that an entire system of services must be designed to coordinate with vocational classes. Without support services directly tied to instruction for each student, vocational education programs will fall short of their potential to improve the employability of most students with mild disabilities.

Increased resources, an emphasis on mainstreaming, interdisciplinary approaches, and coordinated systems of service delivery are all important parts of successful efforts to provide exemplary vocational education to handicapped students.

The final report for this project, "Improving the Options of Handicapped Students in Mainstream Vocational Education," explains in some detail the structural elements of exemplary programs, the practices that make them successful, the resources that such programs require, and the way educators may have to change their approaches. This report also examines the implications of our findings for state and federal policy. We have also produced a book for local educators, "Increasing Vocational Options for Students with Learning Handicaps." This book gives guidance to local educators—vocational education teachers, vocational education directors, special education teachers, resource specialists, and administrators—who are interested in improving the ability of their own vocational programs to serve learning handicapped students.

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CHAPTER ONE

INTRODUCTION

In recent years there has been much emphasis on opening mainstream vocational education programs to students with handicaps. The Education for All Handicapped Act (P.L. 94-142) formally began federal efforts to remove barriers to the participation of handicapped students in mainstream classes generally, and the Carl D. Perkins Vocational Education Act (P.L. 98-524) re-emphasized Congress' commitment to see that handicapped students have access to vocational education in particular. According to a study of longitudinal data on high school graduates, students with handicaps are now more likely to enroll in vocational education courses than are other students. Students with learning disabilities are nearly twice as likely to take a vocational high school major as are non-handicapped students.[1]

As more students with disabilities have enrolled in vocational courses, interest in the quality of these experiences has increased. To some extent, this concern has been prompted by evidence that students with handicaps do not do as well in vocational courses as other students. Analyses of recent high school transcripts reveal that many students with disabilities are not adequately served when they do enroll in a vocational program. The graduation rate for disabled students in the vocational curriculum lags behind that of their peers, indicating that handicapped students gain admission to vocational programs but complete at much lower rates than non-handicapped students.[2] According to the Perkins Act, appropriate support services should be provided to handicapped students whenever they are granted access to vocational education. These services, however, are not always provided and are not always appropriate to student needs when they are provided.

This study sought to determine how occupationally specific, vocational education programs can best improve the employability of students with disabilities in a mainstream school setting. "Mainstream settings" are schools which serve non-handicapped as well as handicapped students.[3] By "vocational education programs," we mean "a planned sequence of courses, services, or activities designed to meet an occupational objective." The "program" thus includes not only a sequence of vocational courses, but any service or instruction, inside or outside the classroom, which contributes to students' ability to find and retain employment appropriate to their interests and abilities. We wanted to see which elements of such programs are essential to the success of students with handicaps, how these elements should be coordinated with one another, and how each of those particular elements is best organized. In order to accomplish this goal, we decided to visit programs which were clearly succeeding with handicapped students and find out what they were doing to achieve that success.

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[1] Delwyn L. Harnisch, Stephen J. Lichtenstein, and James B. Langford, *Digest on Youth in Transition*, (Champaign, Illinois: Transition Institute at Illinois, 1986). The analysis presented in this book is based on the data obtained in the High School and Beyond longitudinal survey, which included only high school seniors working for a regular high school diploma. These data are accurate only for students with mild handicaps. A total of 5573 handicapped students were included in the sample: 324 learning disabled, 1823 visually impaired, 375 hearing impaired, 230 speech impaired, 116 orthopedically impaired, 920 health impaired, and no emotionally disturbed or retarded. The difficulty of generalizing from these data is illustrated by the fact that 94% of the handicapped students in this high school sample had a physical handicap, whereas the national rate among school age children 6-17 is 4%. Nevertheless, the data on those respondents with learning disabilities provide some indication of the educational achievement and course taking patterns for the most mildly handicapped of high school students.

[2] According to the High School and Beyond data, 27% of the non-handicapped students in the vocational curriculum drop out before graduation and 33% of the handicapped students in the vocational curriculum drop out before graduation. Calculated from Harnisch, et al, p.27.

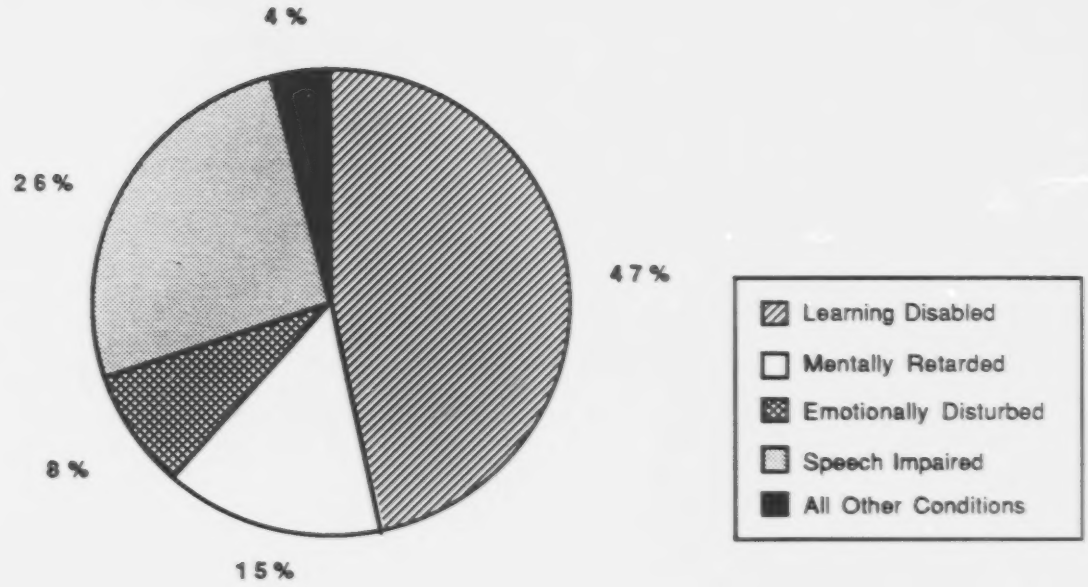
[3] Separate vocational courses within a regular school are thus included in the study, although sheltered workshops are not.

The Student Population

The study focused specifically on programs serving students with special educational needs stemming from a mild learning handicap: the educable mentally retarded, the learning disabled, and the mildly emotionally disturbed. As illustrated in Figure 1-1, such students account for 70% of all students ages 6-17 served in public schools under P.L. 94-142.[4] If vocational educators can determine how to serve these students they will therefore have solved the service delivery problem for most of their potential clients with disabilities. Furthermore, the mildly learning handicapped population comprises a huge majority of the students likely to be mainstreamed in vocational education.[5]

Figure 1-1

Number of Handicapped Students Ages 6-17 Served under P.L. 94-142, 1983-1984



We deliberately excluded from our study those programs designed to serve physically disabled students, since each physical disability has a low incidence in the school population.[6] Each physical disability requires a quite different approach in the classroom: signers for the hearing impaired, different books for the visually impaired, physical changes in the equipment

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[4] These groups account for an even larger percentage of the secondary school students, since speech impairments are less common at that age. Data for Figure 1 obtained from Harnisch, p.129.

[5] Given the difficulty of educating trainable mentally retarded or severely emotionally disturbed students in the traditional classroom, we excluded programs serving these groups from our analysis. While we did visit a few programs where such students were educated in a mainstream setting, this is quite exceptional.

[6] Fewer than 10% of the school-age population has a physical disability, and each specific impairment is a much smaller group.

or classroom for many of the physical impaired. These changes are nearly always physical modifications rather than changes in teaching strategy, curriculum, pacing, or difficulty of instructional materials.

By contrast, students with mild learning handicaps are quite similar to one another in their special educational needs, and are often grouped together in "cross-categorical" classes. Yet mainstreaming can pose a danger to this group, for their special needs may be "invisible" to educators simply because they lack any physical disability or obvious sign of their handicap. As a result, they may be mainstreamed without receiving the special services essential to their success. If we can discover how schools manage to deliver appropriate, quality vocational education to these students, we can communicate the best ways to serve the majority of handicapped students a regular vocational education teacher is likely to encounter.

Exemplary Programs

We examined thirty programs in depth. This sample included both modified and regular vocational classes in nineteen different program areas. The programs were located at twenty-three schools in six states. The schools were both vocational and comprehensive, and their communities ranged from the inner city to remote rural areas in six states. Six states were represented: California, Florida, Illinois, New York, Oklahoma, and Wisconsin.[7] By comparing findings across this variety of sites, we were able to find the common characteristics of good vocational education programs for handicapped students generally, as well as approaches that are preferable in particular settings. This research was quite exploratory. We began not with a particular educational model in mind or with specific hypotheses to test, but with the idea of discovering what works in preparing handicapped students for employment. By identifying the essential elements of the programs we visited, we were able to develop a profile of the model program.

Successful vocational programs for handicapped students are not only a series of vocational classes taught by good vocational teachers, but are also systems of coordinated services from other professionals which students use outside the vocational classroom. Most students will participate in four types of instruction before making the transition to postsecondary education or employment: (1) the special education curriculum, which will include career exploration; (2) the special introductory vocational class; (3) the main vocational sequence in either a modified or a mainstream setting, possibly some of each; and (4) paid work experience. Vocational programs that succeed with mildly handicapped students tailor the courses to handicapped students' needs. Chapter 3 focuses on the classroom and the vocational teacher, describing the in-class approaches which are most effective for handicapped students.

Connecting and supporting the instructional activities are services provided outside the classroom which insure proper student placement and enrich instructional approaches. Some of these services are available from personnel at each school and others are available at centralized locations within a school district or region. Most are provided by special educators or specially trained vocational educators. In order to be successful, the vocational program must truly be one *system*. The courses and services must be interrelated, regardless of whether they are considered part of the special education department, the vocational education department, or the counseling office. The path that particular students take through this system and the components which they experience should be determined by the IEP committee according to the students' individual needs. The fourth chapter of this report describes the

[7] See Appendix A for the process used to select programs for study and a list of programs.

services which should be available outside the classroom if vocational programs are to serve students with handicaps, and how those services must be coordinated.

Goals and Content of This Report

We found a number of school districts working hard to organize district-wide services to handicapped students in vocational education and to make quality vocational programs accessible to these students. Sometimes it was not easy for us to find these programs, both because they are rare and because few people know about them. In the process of learning what works in vocational education for students with handicaps, we learned how rarely these programs work well and how rarely such successful approaches are discussed or emulated elsewhere. We hope this study will accomplish the following goals:

(1) serve as a demonstration that the goal of improved employability for handicapped students is realistic;

(2) communicate how exemplary programs have accomplished their goals; and

(3) provide some recognition for a few schools where vocational education is serving handicapped students well.

This report discusses in some detail how good vocational programs have accomplished the educational goal of successful mainstream vocational education for students with learning handicaps. The tone is prescriptive rather than descriptive. Rather than presenting a description of each successful program, it uses these programs as illustrations of various features which should be included in a vocational program serving handicapped students. Although the fifth chapter summarizes recommendations for change in federal and state policies, each of the other chapters is likewise a set of recommendations for action.

We have also tried to estimate the cost of various services and program changes. Cost data are reported in conjunction with the discussion of each suggested activity. These data are based on costs for the programs we visited, and should be taken as approximate figures. These data are not sufficient to provide good estimates of the cost of a particular activity in any one locale, but they do give an idea of relative costs for different approaches. We have tried to express these costs in per-student terms wherever possible. It is important to remember that the changes recommended here will indeed cost more than current practice, because a higher level of service is provided in good programs. Increased student attendance will recover some costs through state reimbursement, but local education agencies must be prepared to spend more in order to get a better result. If schools try to provide better vocational education to handicapped students without devoting more resources to that cause, the results will be disappointing.

Before describing what is done in successful programs, we begin by discussing the historical and institutional context within which policy makers must understand the effort to provide quality vocational education for handicapped students. This discussion is important because it clarifies why success with handicapped students in vocational education programs is so rarely achieved and so rarely brings recognition. In Chapter 2 we focus on the difficulties of forging a partnership between vocational and special educators to improve the employability of students with disabilities. Only then do we proceed to a discussion of how the programs we visited have succeeded in spite of these difficulties.

CHAPTER TWO

ACHIEVING AN INTERDISCIPLINARY APPROACH

Excellent educational programs have a number of factors in common. Chief among these are capable teachers, small class size, and strong administrative support for program improvement. These qualities are all important to the excellence of vocational programs serving handicapped students. There is another key ingredient to achieving excellence in vocational education for handicapped students: effective use of the specialized knowledge of both vocational and special educators.

As disciplines, special education and vocational education have little in common, for vocational education is primarily concerned with content and special education is more concerned with process. Vocational educators must prepare students to perform jobs in a changing and competitive work world. They measure student success by how closely the student's job performance approximates that of the practitioner. Some vocational teachers, primarily those in the trade and industrial area, acquire their major work experience outside the schools and their major training outside the university. In recognition of this fact, vocational teaching certification in these areas generally requires no more than a B.A., and often less.

Special educators, on the other hand, must find ways to succeed with students for whom the regular education system is inadequate. Their students' success is measured by the amount of progress they make compared to their potential and previous performance. Special education teachers acquire their major work experience in an academic or clinical setting, and certification in special education usually requires an M.A. degree or equivalent. These differences in background and training mean that vocational and special education teachers have very different kinds of goals for their students, different methods of evaluation, and different expectations about the amount that they will have to adjust their curriculum and teaching styles for individual students.

Despite these differences in approach between vocational and special education, quality vocational programs for handicapped students depend upon contributions from both disciplines. Vocational educators have very specialized knowledge regarding the trade or occupation to be taught and the best skills progressions for achieving excellence in that trade. In addition, most vocational educators have experienced the world of work in their speciality and thus understand what kind of behavior is needed in particular work environments. Special educators, on the other hand, have the professional knowledge to understand students' handicapping conditions and the particular kinds of learning progressions that work for each. When students have learning problems that impede their progress in the regular school setting, they need special services, assistance, or learning progressions appropriate to their individual problems. In order to become employable, however, they need to acquire sufficient skill to compete in their chosen field. The design and delivery of a good training system requires vocational education training; the design and delivery of appropriate modifications to that system requires special education training. As a result, these two disciplines must work together closely to provide quality vocational education for vocational education.

Integrating the expertise of special educators and vocational educators is the key to improving options for handicapped students in vocational education. The exemplary programs we studied have all, in some important respect, managed to bring these two disciplines together in order to provide quality vocational instruction for handicapped

students in learning environments appropriate to their needs. This seems like the obvious strategy, yet the implementation of this notion has proved exceedingly difficult in many schools. Since the quality of the vocational education program for handicapped students depends upon coordination between vocational education and special education, it is important to understand the obstacles to such cooperation. This chapter shows how separate these two disciplines have remained in their efforts to improve the employability of handicapped students, despite the clear need for close coordination. This discussion is necessary to understanding how difficult it is to achieve the coordination which we observed during the course of this research.

Vocational Education: Serving Handicapped Students

Vocational educators have been making notable efforts to serve students with handicaps for well over a decade. Partly in response to legislation and rulings prohibiting discrimination against handicapped students and partly in response to the lobbying of interest groups representing handicapped persons, some vocational education departments began to make special provisions so that handicapped students could be trained without going to special schools. The passage of the Education for All Handicapped Children Act (P.L. 94-142) brought increased numbers of handicapped students into regular vocational classes and prompted a greater effort to serve these students in many schools. Various kinds of efforts to reach these students were launched, with some schools establishing special classes, some providing special materials or assistance to students in regular classes, and others teaching their vocational teachers how to recognize and understand students' learning problems. In 1975, Oklahoma's O.T. Autry Vo-Tech established the first separate vocational education program serving handicapped students, using vocational rehabilitation funds. In that same year Illinois' Sauk Area Career Center obtained a state special education grant to organize its efforts to serve handicapped students in its regular classes. Most of the school districts represented in the sample of programs we studied were engaged in such efforts by 1978.

Since 1968, federal legislation has sought to facilitate such efforts by requiring that a portion of federal funding for vocational education be "set aside" to serve handicapped students. The Vocational Education Act Amendments of 1976 and in the Carl D. Perkins Vocational Education Act of 1984 included a funding "setaside" for handicapped students. These acts have ensured that some money would be reserved for assisting handicapped students. The funds may be used for a variety of purposes so long as they fund either of the following: (1) special classes and services earmarked for vocational education only; or (2) the "excess cost" of educating handicapped students in regular programs (i.e.—expenses over and above what it would cost to train a non-handicapped student in the same class).[1] In providing the setaside, Congress recognized that many handicapped students require special help in order to succeed in the vocational curriculum. The setaside funds are provided for the support services that handicapped students require when they attend vocational classes, but federal policy does not dictate how those students should be served or the educational setting in which they should learn.

Special Education: The Concern with Employability

If vocational education were available to handicapped students in the mainstream setting only, special educators would act as advocates for their clients in securing their

[1] Since 1976, these funds have also been subject to a fifty per cent state and/or local matching requirement.

access to appropriate training and monitoring the programs' service delivery. Equal access is still a distant goal in many vocational programs, but most of the special education teachers and supervisors we interviewed no longer expended much energy securing access for their students to mainstream vocational classes. Of course, the schools we visited have exemplary vocational education programs and have long provided good access to handicapped students. However, even in schools where mainstream vocational education has not served vocational education very well, special educators rarely pressure vocational departments to serve handicapped students in the mainstream classroom. Instead, many special educators have shifted their focus to providing their own instruction and pressuring vocational departments to offer separate vocational classes. There is an increasing number of separate classes offered by vocational education departments specifically for handicapped students, in contrast with the low number of mainstreamed handicapped students in many schools. At the same time, special educators' attention has shifted from access issues to "transition" issues, especially their students' general employability at graduation. Many appear to have lost faith in the ability of vocational education classes to accomplish that goal. Consequently, special educators are increasingly involved not so much in seeing that their students have access to appropriate vocational education programs, but in designing and offering vocational education themselves.

Separate Vocational Classes

One area of major effort has been the separate vocational sequence, which is often designed or staffed by special educators although it is part of the vocational curriculum. In some cases these courses are open only to special education students, while in others they are open to any student who needs the extra assistance. The most extensive system of "modified" vocational courses we observed was in the New York City schools, although other districts with strong special education departments are also establishing such programs. In Dade County, these courses are designed by special educators although they are taught by vocational educators and funded through the Perkins Act. In both of these school districts the students can move from the separate setting to the regular classroom if they progress well enough, but in both districts most students stay in the specialized setting, progressing at a slower rate but learning the same occupational skills as those in the regular classes.

General Preparation for Employment

Special educators in a growing number of schools have also designed programs to provide opportunities for career exploration and instruction in general employability skills. Special educators are also increasingly active in teaching their students job-getting skills through classroom instruction: selecting jobs, applying for jobs, and interviewing successfully. The special education department at Aragon High School in California's San Mateo Union High School District, for example, offers an excellent year-long elective course in employability skills. This course builds students' sense of their own competence during the vocational assessment and career exploration units of the first semester. During the second semester students learn how to find, select, and apply for jobs. In addition, community employers stage mock interviews with students for jobs related to the students' interests. The interviews are videotaped so the class can critique the performance of their fellow students in the interview situation. This class builds students' self-confidence generally, while giving them important job seeking skills. A major objective of the district's special education department is to institute this course district-wide, and units of similar content are part of the special education curriculum in many other schools.

Work Experience for Handicapped Students

Many special education departments also offer instruction in employability skills through separate work experience programs for handicapped students. These programs differ from those which culminate a vocational sequence: they are not designed to provide on the job training in occupationally specific skills, but are designed to provide an opportunity for students to acquire the "employability skills" which are needed for keeping any job. An excellent example of such a program is Diversified Cooperative Training for the Handicapped, a program in the Dade County School District, Florida. This program provides paid employment in the local community to handicapped students. The Dade County Vocational Education Department actually funds and administers this program; some work experience programs for handicapped students are funded by the local rehabilitation agency and organized through the special education department. Such work experience programs require no specific vocational education. Work experience is offered to handicapped students as an alternative to vocational instruction in some school districts.[2]

These three kinds of efforts—separate instruction, employability training, and special work experience—have been designed for students who could not succeed in the mainstream vocational classroom. Each of these three is a needed component of the transition system. Yet there are some unresolved difficulties in coordinating the mission of special educators to provide these special programs for their students and the mission of vocational education to provide appropriate mainstream education to handicapped (as well as other) students.

Dual Systems of Education for Employment

The new emphasis on transition among special educators and the continued emphasis on access for handicapped students to occupational training among many vocational educators has created two parallel systems for improving the employability of exceptional students. These systems coexist in good schools, with mainstreamed students participating in the vocational education system and non-mainstreamed students participating in the special vocational education system.

Lack of Special Educator Involvement in the Regular Vocational Curriculum

While both mainstreamed and non-mainstreamed students may receive some of the same training in employability skills through the special education curriculum, responsibility for their training diverges once the IEP committee places the student in specific vocational education or special work experience. At that point the employability of the student who is mainstreamed stops being the sole concern of the special education system. Unfortunately, at that point the employment future of the mainstreamed student may well cease to receive any significant amount of attention from the special education system. The special education department usually does not maintain adequate records on the vocational enrollment of mainstreamed students. Many of the special education teachers are not aware of the type of mainstream vocational instruction their students are receiving, let alone how they might assist the student. Only in rare cases are special educators or special education funds involved in assisting those students, or in assisting the teachers who must teach those students. Special educators do not see themselves as consultants to

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[2] These stand-alone work experience programs should not be confused with work experience that is offered as the last year of specific vocational education. Jobs held as part of a vocational sequence are often referred to as "coop,." They involve work in the vocational field in which the student has trained and are supervised by a certified vocational education teacher.

the mainstream. Without some requirement that special educators expand their mission to include direct service to vocational education students in mainstream vocational courses and to those who teach them, it is not surprising that these specialists prefer to channel their energies into their own courses rather than trying to influence vocational educators who may not appreciate their efforts.

Vocational Educators Encourage Separate Programs

Separate courses have become quite popular with vocational teachers as well as with special educators. Many of the teachers prefer to separate out those students who pose a special challenge, because they fear they will have to "water down" their courses if they include students with learning problems. Administrators prefer the separate classes as well, partly because this arrangement simplifies the calculation of the "excess cost" of providing vocational education for students with handicaps.[3] In those cases where the vocational education department is not committed to serving handicapped students, placing handicapped students in separate classes is a very attractive solution because this arrangement can be used to remove these students from the regular classroom and put the entire burden of educating them on the most receptive teachers. Sometimes the separate class is added as an extra class period to the teacher's day, creating an "overload" schedule which requires a special payment. Often, vocational teachers do not object to this arrangement, combining the relative ease of segregated classes and the advantage of extra pay. In districts where the overload option is available, many teachers apply to teach such courses, even some who resist taking handicapped students into their mainstream classes.

The allocation of federal funds into separate classes not only allows resistant vocational educators to keep students separated but may also lead responsible vocational and special educators to prefer the separate setting, even when they believe in mainstreaming. When schools channel a large portion of the setaside and matching funds into the segregated setting in order to support separate classes as nearly as possible with "outside money," there may be little "outside money" left for support services to the mainstream and little "local money" allocated for that purpose either. In such schools, mainstreamed students have fewer support services than they need. Then the separate classroom, with its smaller size and more sympathetic teacher, may actually be a more effective learning environment. Even where the mainstream class is taught by an excellent and sympathetic teacher, the lack of support services available there will likely decrease the quality of these programs.

Inadequate Accommodations in Mainstream Classes

Not only do many vocational administrators prefer to spend much of the setaside on separate classes, they are also driven by accounting concerns in the way they allocate setaside funds to mainstream settings. Although there are actually few federal restrictions on the type of items that setaside money can be budgeted for, local education agencies have been very conservative in the way they have spent VEA money. Due to the "excess cost" requirement and the difficulty of calculating excess costs for a particular class, school administrators have preferred using the setasides for services that produce a separate line item in the budget (when they are not spending the setaside funds on totally separate classes). Vocational administrators fear they cannot fund any item which would increase the quality of the mainstream classroom experience for all students, and they are not willing

[3] Under previous vocational education legislation, federal funding arrangements actually encouraged separate classes by permitting a higher rate of reimbursement for these than for excess costs in mainstream classes. Although expenditures in both settings are now treated equally, some of the effects persist due to the slowness of institutional change.

to face charges of supplanting during a federal audit.[4] The popularity of certain services is attributable more to this quality than to their educational value in a particular setting. Teachers' aides are a good example: aides are commonly funded as a special support service, although many vocational education teachers feel that most aides are so inexperienced that they are more hindrance than help. Other popular expenditures are special teaching materials, special equipment for the physically handicapped, and tutors. Despite the need to provide release time for special educators to visit vocational classes and stipends for vocational teachers modifying their curriculum, the setaside funds are rarely used for these purposes. Administrators prefer to spend the setaside on "safe" items rather than on the services most needed by the students served. Accounting concerns drive out educational concerns.

Regardless of how well the federal funds are spent, vocational teachers in most schools have difficulty providing appropriate education for mainstreamed handicapped students. The major difficulties are the teachers' own lack of information and the size of their classes. Many vocational education teachers lack the specialized knowledge to choose or provide the kinds of services their handicapped students need. Most vocational teachers lack sufficient information about their handicapped students: some do not understand their students' disabilities, while many others know little more than the category label applied. Very few vocational teachers talk regularly to the special education teachers about particular students, and even fewer have ever reviewed an IEP. As a result, good teachers often find their efforts are inadequate with handicapped students. Large classes also burden many mainstream vocational teachers, inhibiting their ability to individualize instruction. The class size in the mainstream lab is usually a startling contrast to that in the special education class or special vocational education class: student-teacher ratios in the mainstream aregenerally more than double than in the separate class. With classes this large, it is unlikely that any expenditure of the setasides can substitute for the lack of time with the teacher and time with the equipment that many handicapped students need.

Special Educators Choose the Separate Environment

Due to these difficulties serving the mainstream student, there may be a tendency for IEP committees to send more students to separate vocational classes than they would if the appropriate support services were available. The decision to mainstream a student or keep that student in a separate program not only determines the student's options but also the level of assistance which that student will receive. While it is true that the students who are mainstreamed are the very students who require less attention than their non-mainstreamed peers, the gap in service levels is far larger than any difference in average need between two recognizable groups of handicapped students. The system of service delivery is intensive and individualized for non-mainstreamed students; mainstreamed students participate in a vocational education system which permits far less individualization and less feedback. A high level of functioning is required in order to succeed in such classes, despite the fact that a lower functioning student could succeed in that setting with more support. To the extent that being mainstreamed means learning in an environment quite removed from the specialized knowledge of those who understand learning handicaps, the proportion of the students placed into mainstream classes in that

[4] Barbara Beno, E. Gareth Hoachlander, et al, *Vocational Education Survey of Special Populations*, a report prepared for the Center for Educational Statistics, U.S. Department of Education, January 1987, p.32.

school is reduced. Generally, students who "should" be mainstreamed are placed in more restrictive environments in order to assure that they are able to learn.[5]

Special educators disagree on the relative merits of mainstreaming and separate instruction for many handicapped students.[6] However, the inadequacy of the mainstream environment prejudices the decision, systematically encouraging IEP committees to place more students in restrictive settings that offer more assistance. To the extent that learning in a mainstream vocational class increases the student's employability in a variety of settings, and to the extent that there are other benefits to learning in the mainstream, the separateness of the two systems harms those who could be mainstreamed if there were an adequate support system. Given the separation between the special vocational education system and the mainstream vocational education system, and the low level of financial support often given to the mainstream system, there is a conflict between access and quality when students are placed in most vocational programs.

The Need to Coordinate the Two Systems of Vocational Education

The existence of two separate systems of vocational education has important ramifications for the quality of training that handicapped students can receive in the mainstream. Since these two systems can remain quite separate, there is no guarantee that students in the mainstream will in fact receive the specialized assistance that they need in order to succeed with their vocational education. Schools must bring these two separate systems of vocational education closer together in order to improve handicapped students' employability in appropriate settings. This effort requires that special educators and vocational educators work together in the design and implementation of vocational programs and related services. In order to mainstream more students, and in order to provide needed services to mainstreamed students, special educators and vocational educators must learn to work together and they must learn to communicate on a regular basis about the structure of the curriculum and about particular students. By "communication," we mean a true sharing of perspectives as well as regular formal interaction.

Obstacles to Cooperation

Calls for interdisciplinary approaches to education are not unusual, but an interdisciplinary approach to vocational education for handicapped students may be particularly difficult to achieve. There is such a divergence between the modal background, teaching style, values, and expectations of the special educator and that of the vocational educator that communication between these two groups within a school or a school district can be quite difficult. Special educators have been trained to recognize and adjust to individual differences, to adjust their expectations to the student. They also have had the "luxury" of doing this, because their classes are usually quite small. Vocational educators have also been trained to teach, but they are usually more concerned with achieving a particular level of skill in their occupation. They are no better trained to recognize or to accommodate student exceptionalities than are teachers of mainstream social studies or English classes. Since most vocational classrooms are close to average size for their school

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[5] As in any teaching arrangement, concern is often expressed regarding the denial of opportunities to those in lower tracks and slower classes, opportunities which are available to those in mainstream classes. For more information on this general issue, see Jeannie Oakes, *Keeping Track*, (New Haven: Yale University Press, 1985).

[6] M. Stephen Lilly, "The Relationship between General and Special Education," *Counterpoint*, March 1986, pp.7-9; and Frederick J. Weintraub, "Why We Don't Need Dragons Any More," *Counterpoint*, March 1986, pp.10-12.

setting, the vocational teachers have less opportunity to discern or accommodate individual differences in their students.

Since many vocational education teachers have had experience in their trade or occupation, they know how to supervise and instruct a wide variety of people. They have learned how to communicate with different types of people, but they are not necessarily receptive to students who are deficient in basic skills. In the world of work the employee must "qualify" for the job and is expected to understand the instructions given with a minimum of explanation. Only in the lowest level jobs is the supervisor expected to accept persons of any skill level and to provide training to employees who lack knowledge of the trade. By contrast, the special education teacher is trained to reach the students wherever they are and to use teaching strategies appropriate to each. On the job, the burden is placed on the employee to measure up; in the special education classroom, the burden is placed on the teacher to reach the student.

There are exceptions to this "dual system"—many of them at programs selected for this research—yet the central tendencies of the two disciplines are sufficiently divergent to present obstacles to cooperation. The differences between the two disciplines are exaggerated by their images of each other. Special education teachers often refer to vocational education teachers as "shop teachers," despite the variety of vocations represented and the degree of skill required for various classes. Vocational education teachers often feel that special education teachers "have it easy" because special classes are so small; they resist the notion that teachers with classes of twelve students can give them practical advice on how to cope with handicapped students in a class of twenty-five. Some vocational teachers feel that special educators "coddle" their students, thus failing to prepare them either for the mainstream classroom or for the world of work. Some vocational educators claim that vocational education courses are valued by special educators mainly as therapy for their students, a way to make them feel better about themselves; the vocational education teacher sees the course more strictly as work preparation. For their part, special educators claim that vocational education teachers expect handicapped students either to measure up without help or simply to mark time without causing trouble. While these views of each other are certainly not uniformly held and are certainly less common at schools with good programs, they were frequently expressed during confidential interviews at schools visited for other research.[7] During the interviews for this project, such views were often cited as typical at "other" schools or typical of "other" teachers. Some admitted that they had held these views once themselves, before broadening their experience through joint projects.

Differences by Vocational Program Area

It is worth noting that the obstacles to cooperation between vocational educators and special educators vary somewhat with the vocational area. The world of vocational education is at least two worlds, the predominately male world of trade and industry and the predominatley female world of the information and service economy.[8] The tendency of both students and teachers to follow traditional sex stereotyping in their occupational choices poses significant problems for assisting handicapped students in the traditionally male vocational classes. Most of the learning disabled and behavior disordered students are male, so most mildly handicapped students who are mainstreamed into the vocational classroom will choose a program in the industrial education area. This traditional pattern is further encouraged by the fact that industrial education programs have a smaller academic

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[7] Beno, Hoachlander, et al, p.33.

[8] Among the occupationally specific courses in the service sector, only a few areas commonly have male teachers and some male students. This is most common in food service classes and some business courses.

component than many other vocational programs, so that students with reading problems are more likely to choose them.

Despite the lesser academic element in these "shop" classes, students with learning handicaps still need special assistance in order to succeed there. Unfortunately, the personnel responsible for providing that assistance usually lack even the most basic technical knowledge in the vocational area. Most special education teachers and most teacher's aides are female, and like most adult women they have never had an introductory industrial arts class. As a result they are ill equipped to help students learn the technical vocabulary, to assist them with their projects in the workshop, or to help them master the basic skills of the trade. It is debatable how much classroom teachers or aides can be expected to learn about several trades, and it is also debatable how much they actually need to learn in order to play a meaningful role in assisting the students. But as long as many aides and special education teachers view themselves as removed from the industrial education curriculum, and as long as industrial education teachers see them as unqualified to assist students in learning their trade, the degree of cooperation and communication between special education and vocational education teachers will be far below its optimum.

Opportunities for Cooperation

On the bright side, there are new opportunities for cooperation as well as old obstacles. As special educators focus their efforts on the transition from school to work, some have realized that they should not only design their own programs, but also help vocational education succeed with handicapped students. As the increased standards for graduation take a toll on vocational class sizes, some vocational teachers have realized that including handicapped students in their programs, whether in modified or in mainstream classes, is a way to protect their jobs. Recent experience has taught them that they need not fear that special educators will push for wholesale mainstreaming in vocational classes, so they are less resistant to admitting handicapped students than they were just after the passage of P.L. 94-142. Conditions for new efforts at cooperation between special education and vocational education are therefore far better now than in past years, although the differences in attitude and background remain and will continue to pose obstacles to successful collaboration. The means of cooperation established by the exemplary programs we observed should prove instructive to those who wish to follow their lead. Their difficulties in achieving this cooperation should prove instructive to designers of state and federal policy toward vocational education and handicapped students.

An Example of Successful Cooperation

How do vocational and special educators work together in an exemplary program? The idealized student case history below provides an illustration of how this would happen over the course of one student's school career. While we did not anywhere observe a system where the vocational program was organized in exactly this manner, this case study incorporates all of the elements of coordination which we found important in a significant number of programs.

A Case Study in Vocational Special Education

Because of a learning disability and behavioral problems, David was placed in a self-contained special education class in the third grade. His behavior improved in this setting, but because his attention span was short and his behavior disruptive unless he was closely supervised, David remained in special education classes through the sixth grade.

Without the special programs available in his school, David's problems would have kept him from pursuing vocational training. Fortunately, his school district began preparing him for the world of work even during the junior high years and continued special efforts toward this goal through his graduation.

In junior high school, David was in a special education class for most of the day, but was able to attend mainstream art and physical education classes. He tried hard, but in the eighth grade, David performed only at the sixth grade level in math and the fourth grade level in reading. In addition, his short attention span still caused problems.

Career exploration activities were included in the curriculum for the eighth grade special class. David and the other students spent time at an assessment center, visited some work sites, and saw films about different careers. David discovered that he enjoyed working with his hands, especially with wood.

David's IEP meeting at the end of eighth grade was attended by David, his parents, the special education teacher for ninth grade, and the high school vocational special needs coordinator. The program developed for David for ninth grade included an introductory course in industrial arts for designed for special needs students.

David thrived in the industrial arts class. Although the instructor had little training in special education, he was an accomplished craftsman and a patient teacher. They were supported in their efforts by the special needs coordinator, who checked on David's progress regularly and suggested ways to get him over some rough spots, and by David's special education academic teacher, who developed special vocabulary lists and made sure that David mastered fractions. At the end of ninth grade, David reaffirmed his interest in working with wood. The consensus of his IEP committee was that he could manage a mainstream class in construction technology in the tenth grade if he were given extra help with reading and provided with materials closer to his reading level.

David tried hard, but the mainstream class was not easy for him. Because of his reading problems, David found the textbook and other written materials difficult to understand. His attention span was good when he was working on an assignment he could handle, but he was very impatient if he had to wait for help. Because there were eighteen students in the class (compared to nine in his industrial arts class), he was forced to work with far less help from the teacher than he was used to. Nevertheless, with a resource teacher to assist him with the written materials, and two advanced students to help him in the shop, David managed to complete the course successfully. The special needs coordinator monitored David's progress throughout the year to make sure that he did not need to be transferred to their modified construction technology program.

In eleventh grade, David spent his mornings in a construction carpentry class at the area vocational center ten miles away. The teacher insisted on a very work-like atmosphere and demanded high quality carpentry. David rose to meet the challenge, and enjoyed the fact that many of the other students did not even realize that he was a "special ed" student. Assignments that required reading still caused him trouble, so he spent some of his afternoons getting help at the Learning Resource Center at his home high school. To help further, the carpentry teacher provided David with some simplified materials he had developed the previous summer. The special needs coordinator closely monitored David's progress throughout the year. At the IEP committee meeting at the end of the year, the construction carpentry teacher expressed confidence that David could manage the work experience program the following year.

During his last year in high school, David worked at a construction site part time while taking his full academic curriculum. He received the minimum wage for his work. The construction supervisor was frustrated with David's slowness at times, but the owner of the construction company (a member of the advisory committee for the area vocational center) was committed to providing jobs for special education students. David met weekly with the carpentry teacher and the teacher visited the job site regularly.

Towards the end of his senior year, David's IEP committee met to discuss his transition from school to work. The committee this year included a job placement specialist for the school district, who helped David find a job at a construction site. The job placement counselor looked in on David on his first day on the job, again after a week, and monthly for a year. On one occasion, after an argument with his supervisor, David dropped in to seek advice from the counselor. A year later, David was still working with the same construction company—truly a success story.

Conclusion

The story above illustrates what can be done when vocational and special educators cooperate to help a student in a district where adequate financial support is available and good programs are in place. While the program described above is an ideal construct, each of its features can be found in some of the programs we visited for this research. Despite the low level of cooperation found between special educators and vocational educators at many schools, the programs we visited had established this cooperation as a part of their education system. This cooperation, in addition to various modifications that they have made, enables these programs to serve handicapped students in vocational education classes.

The rest of this report describes what education officials at different levels of government can do to improve the employability of mildly handicapped students. Throughout, the discussion is relevant to the responsibilities of both vocational and special educators. We begin by discussing arrangements within the classroom, then proceed to progressively higher levels of organization. Chapter 3 discusses the quality of vocational instruction in the classroom, describing how vocational educators have optimized classroom arrangements in order to serve handicapped students. Chapter 4 discusses components of the overall system of education for employment, components which must be designed and organized throughout entire school districts. Chapter 5 focuses on policy recommendations for state and federal policymakers in vocational and special education.

CHAPTER THREE

THE VOCATIONAL CLASSROOM

Several of the teachers we interviewed emphasized the importance of their knowledge of specific occupational skills in helping them to serve those with special needs. Since vocational teacher education programs already emphasize that expertise we do not examine it here. We focus in this chapter on those variables of classroom instruction that have often not been considered important in vocational education, but which are especially important for the quality of vocational education for handicapped students. Vocational programs serve handicapped students best when classroom instruction is characterized by the following:

(1) the instructional sequence offers different learning environments, from the most to least restrictive, and ways for students to move from one to the other;

(2) vocational classes are small and each mainstream class serves just a few handicapped students;

(3) classroom teachers have qualified assistance on a regular basis;

(4) learning goals for the class include employability, academic, social, and occupational skills;

(5) teachers match instructional materials to student abilities; and

(6) teachers provide extra attention to handicapped students without stigmatizing the through differential treatment.

This chapter shows how good vocational programs achieve these goals, using examples from the thirty programs visited for this research.

(1) Instructional Sequence and Curriculum Organization

The number of semesters included in a vocational sequence varies with state and local requirements as well as the nature of the occupation. Despite this variation, certain features of curriculum organization are ideal and others extremely helpful for serving handicapped students. An individualized, competency-based curriculum with multiple exit points is an ideal way to organize the vocational course. Where such a curriculum has not been adopted, advanced courses can be tied to specific occupational outcomes and can follow special introductory classes. Good programs also offer a choice between special and mainstream classes.

The Individualized, Competency-based Curriculum

Individualized, competency-based vocational course sequences are very effective for handicapped students. In such a curriculum, instructional units are based on detailed occupational and task analyses. When the curriculum is so organized, students begin at a level of instruction which they can handle and continue at that level of instruction until they demonstrate their mastery of the material. Only then do they proceed to the next unit. Under this system, teachers should not need to change the curriculum for special needs students. All students proceed at their own pace, achieving the maximum they are capable during a school year and continuing in the skills progression the next year. We saw

individualized, competency-based systems in Oklahoma, not only in separate classes for handicapped students but also in mainstream classes where significant numbers of handicapped students were enrolled.[1] These programs worked extremely well, because students can truly work at their own pace. Slower students master each skill before progressing to the next, rather than acquiring a surface familiarity with work skills that they have no time to master. These students do not slow down the pace for faster students, so it is possible to mix students of different abilities in vocational classes yet provide all students with the appropriate level of challenge and support. Teachers using the competency-based approach stated the curriculum structure was the primary factor enabling them to provide excellent vocational education for handicapped students in the mainstream setting. They praised this approach for the separate setting as well.

State vocational education officials in Florida are also committed to competency-based education, so a number of the classes we visited there used such a system. The appliance repair course at Robert Morgan Vocational Technical Institute in Miami is taught through learning packets developed by the teacher, who has found that this system helps him to accommodate special needs students. Since students proceed at their own pace with a variety of instructional materials, the teacher is able to provide more individual help and can rely on more advanced students to help the others. The plumbing teacher at Locklin Vocational-Technical Center in Milton has likewise developed his own competency-based system, and is developing videotaped presentations for the learning modules.

Multiple Exit Points

The vocational curriculum that can best serve both handicapped and non-handicapped students has multiple exit points. Career ladders have several steps, and students can exit at different points in the vocational curriculum for different jobs. Not every industrial education student will become a journeyman in the trade and not every student pursuing a health occupation will be able to pass the state examination, but each can learn enough to perform a job that is on that career ladder: carpenter's helper or laundry aide, for example. When a career ladder is developed for a vocational course, students can progress as far as they are able and can esily find out which jobs they are qualified to perform. The career ladder helps keep students out of dead end jobs by acquainting them with a number of options and showing them how greater skills can increase those options. The learning activity packets in Oklahoma's vocational programs specify the "spin-off occupations" for that level of competency, so students progress is clearly tied to specific occupational outcomes. Students who complete only 20% of the units in the commercial and home services program at Francis Tuttle Vo-Tech Center are qualified for the following jobs: sewing machine operator, assembly line worker, seamstress helper, laundry worker, ironer, alteration apprentice, and clothes room worker.

Multiple exit points can be provided even when the curriculum is not individualized. Jobs should be clearly tied to competencies so students can always associate what they are learning with particular occupations. The assistant principal for special education at New York's Clara Barton High School tells the health assistant and dental lab teachers at her school that "Each of the different skills can be a job." At a number of the schools we visited, students were given certificates of completion indicating their level of skill mastery for all relevant competencies. Students are considered "completers" when they achieve very basic skill levels; only the back of the certificate differentiates between those who master all of the competencies and those who learn less. The certificate shows students and parents exactly which skills need improvement.

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[1] All vocational programs in Oklahoma are so organized. None of the other states we visited has mandated such a curriculum, although some are encouraging it.

Sometimes there are obstacles to creating multiple exit points. Despite Florida's emphasis on competency-based training, the state vocational board has required a fixed level of achievement for any completion certificate. For many programs that level is much higher than is needed for most of the related entry level jobs. Few handicapped students can complete these programs at a high enough level to obtain completion certificates before they graduate from high school, and there is no other certificate given for completion at a lower level. Many "non-completers" in appliance repair, including handicapped students, find jobs in the field despite their lack of certificate because there are plenty of entry level jobs below that level. Despite the lack of attention to the career ladder concept by state vocational officials, the special education department at Florida's Locklin Vo-Tech has developed special vocational certificates for the "helper" level in various trades.[2] Special diploma students in vocational education there can receive a completion certificate for a different exit point than their non-handicapped peers, a certificate which represents their ability to perform an entry level job in that field.

Introductory Courses

The completely individualized curriculum requires a great deal of advance work and necessitates small classes. Perhaps this is why it is so seldom achieved, despite its frequently-proclaimed efficacy in vocational education. When complete individualization is not an option, there is another feature of curriculum organization which can easily be instituted to improve a traditional vocational program. During an introductory year in a small, separate class handicapped students can learn basic occupational skills and become familiar with the procedures in vocational education. An introductory year is especially important to the many handicapped students who have not been mainstreamed before.[3] This introductory year works best as a survey course in several vocational areas in which the student has indicated an interest. At Edgerton High School in Wisconsin high school students are encouraged to take four semester-length survey courses in four separate program areas. Once they complete the surveys, these students are encouraged to go on in an area that interests them. At East Alton-Wood River High School in Illinois, students take a year-long course with nine weeks in each industrial area the school offered; this course and teacher approval are both required for admission into a regular vocational program. Such introductory courses provide an opportunity for career exploration, a chance to learn basic skills for the chosen occupation, and some basic consumer craft skills in other areas.

The most effective introductory classes are small, so the students can get the attention they require and do not have to wait for machines or equipment. If the occupational area has a significant academic component, then teachers' aides will probably be needed in the introductory class. Modified teaching materials are very useful at this stage, helping students master basic math concepts and vocabulary. Special teaching techniques may be appropriate here as well. The introductory class should be taught by the same teachers who will have the students in the more advanced courses, so that the students can become familiar with the teacher's personality, teaching style, and expectations. This also gives the vocational teacher an opportunity to become familiar with the student's particular learning style in the small setting of the introductory class. When handicapped students have the advantage of extra preparation in the introductory year, they perform far better once they are mainstreamed into the occupational sequence of their choice.

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[2] These certificates can be awarded only to students working for special diplomas; for regular diploma students the usual completion standards must still apply.

[3] According to our respondents, many of their handicapped students have been mainstreamed only in fine arts or physical education.

The Cost of Special Introductory Vocational Classes

Since the introductory curriculum is already established in each program area, there should be minimal extra cost to designing a course sequence like the one recommended here. The cost of smaller introductory classes does impact on overall program costs, but for many of the students that cost is merely transferred from one budget to another; it is not an additional cost due to the separate vocational class. This is the case because many of the students in the separate introductory class cannot function in a larger group at this stage of their instruction. The alternative to the separate class for these students is the special education classroom, where a teacher-student ratio of twelve to one is the norm. When these students are in the vocational lab rather than in the special education classroom, the ratio of twelve to one simply has to be funded for a different department. It is a ratio that would have been supported in another setting, not a new cost.[4]

A Choice between Special and Mainstream Vocational Classes

After the introductory sequence, handicapped students able to succeed in the regular vocational sequence can enroll along with non-handicapped students. In these mainstream classes, there need be little change in the curriculum. Some of the teachers we visited do make adjustments to the assignments and evaluation for certain students: deleting particularly difficult projects, eliminating or altering particular tests, rotating students past work stations for which they are not yet ready, etc.[5] The woodshop teacher at Chicago's Curie High School pretests each student in the basic academic skills so he will be better able to assist any student with particular academic deficiencies and ask the student's special education teacher to work on these. With adequate provision for appropriate support services, *mildly* handicapped students should be able to function well in the mainstream setting with no more than these changes.

Those who can learn the trade but cannot succeed in the mainstream classroom should participate in a separate vocational education program. The separate programs we visited were aimed at students who can learn most of the same vocational skills as their non-handicapped peers, but simply cannot keep up with the pace in a regular class, even with special adjustments. Even in the separate programs, teachers do not usually alter the regular curriculum or change learning sequence. They use lower reading level materials, experiment with special teaching strategies, and slow the pace of the class.[6] As in mainstream classes, students should receive a final certificate that indicates the skills they have mastered and the occupations for which they are trained.

Separate vocational classes should be available in enough variety to provide real options for students needing a somewhat restrictive setting. We believe, however, that special educators should seriously consider mainstream vocational education as an option for each student diagnosed as learning disabled, mildly retarded, or mildly emotionally disturbed. According to the teachers we interviewed, mainstreaming has a very positive effect on most mildly handicapped students. Separated for years from their non-

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[4] It could even be argued that, in the long run, the smaller introductory course will save money, since many of the students will pass from the separate course into a larger mainstream class for the next year;If the student would have remained in the special education classroom had they not enrolled in the introductory class, then the investment in the first year program is amply repaid during the following years.

5 The more closely the class approximates the individualized model, the less the teacher will have to make these decisions.

[6] Depending upon the occupational area, special courses we visited in Miami, Florida and in Yorktown Heights, New York would proceed at half to two-thirds the pace of the equivalent class in the regular curriculum. The special classes visited in Oklahoma City and Enid, Oklahoma were completely individualized, allowing students to proceed at their own pace.

handicapped peers and often stigmatized as a result, these students enjoy the opportunity to be "just like the other kids" by attending regular vocational classes. When students are sent to a vocational center the effect is even greater, because many of the students there will not realize that they attend special classes at the home school. Many vocational education teachers assert that most handicapped students perform better simply because they are no longer treated differently or with lower expectations than the other students, so that mainstreaming helps them to improve their performance. Teachers strongly assert that functioning in a mainstream setting is necessary to real employability, and thus is an important experience regardless of its effect on specific occupational skills.

The decision to mainstream a student rests with the IEP committee and is made on an individual basis. Yet it is worth emphasizing that these committees should not be too conservative in assigning handicapped students to mainstream courses; the fact that separate classes are smaller and taught by teachers with more experience in special education should not tempt the committees into assigning to that setting those students who can function in the mainstream. We think that separate introductory courses are an important bridge to the mainstream for many handicapped students, but if kept in separate classes despite their greater abilities, mildly handicapped students are being denied their chance to improve their performance and become more employable. Many of the teachers we interviewed stated that instruction in the mainstream setting greatly increases a student's chances of getting and keeping a regular job.

The view of handicapped students "blossoming" in the mainstream vocational class is consistent with what we observed in the excellent programs we visited. But two cautions must be re-emphasized: (1) for some students, the mainstream is not an appropriate setting even when teachers are receptive and sufficient support services are in place; and (2) the mainstream experience may be detrimental if the teacher does not know how to serve the special student or is unwilling to try. Vocational educators must pay more attention to making mainstream classes work for handicapped students, or such placements will continue to be unattractive alternatives to the separate setting.

(2) Class Size and Composition

In our observation of good programs, we became convinced that the sheer size of many mainstream vocational classes is an obstacle to serving handicapped students well. Separate classes are usually fairly small, but mainstream classes are often too large for effective teaching of special needs students.[7] Yet the best mainstream classes we observed were also small, with student-teacher ratios of well under twenty to one. The teachers we interviewed felt that quality suffered as ratios reached above eighteen to one, even in otherwise excellent programs. In order to facilitate the kind of special attention needed by handicapped students without jeopardizing the education of the non-handicapped majority, the size of mainstream classes should be restricted. Oklahoma's mainstream classes are rarely larger than fifteen. The teachers in these small classes are able to provide a high level of personal attention in teaching occupational skills. In addition, they also had the time to counsel students about career choice, personal problems, and social skills.

Class size is crucial because students with learning handicaps, almost by definition, are those who need extra help. Every teacher we interviewed mentioned the

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[7] Many of the IEP committees agree, and tend to place their students into separate classes rather than mainstream classes. Considering the usual size difference between these two settings, that is not a surprising placement decision: special classes are small, limited by law in some states to twelve students or less, and never larger than this in our observation. By contrast, mainstream classes in some vocational areas may be as large as thirty-six.

importance of providing extra time and attention to handicapped students. In order to do this, the overall class size must be small enough to make "extra attention" possible without shortchanging the rest of the class. In special vocational classes the size of the group is usually quite limited, in some districts by regulation. The New York State limit of no more than twelve students per teacher in a modified instructional program should be considered a maximum at all schools. Many of the separate classes we observed had even fewer students than this, and many of these classes were also served by paraprofessionals.

The separate, introductory classes described in the previous section should also be kept quite small. Most regular introductory vocational courses are larger than the advanced "labs." It is important that students with special needs not be mainstreamed into those classes as a matter of course, because they will not receive the attention they require. Particularly for the large number of students whose first classroom mainstream experience will be in the vocational lab, it is important that the change from the small special education class to the vocational class not be such a break from the past. In the new setting of the vocational classroom, the first class experienced must be small enough to provide the encouragement, instruction and reinforcement needed for learning new skills.

Class size in the regular vocational class must also be related to the proportion of the group which has special needs. With a few notable exceptions, the proportion of handicapped students in the programs we observed was usually small, approximately fifteen per cent. It is difficult to generalize about the appropriate numbers, because the optimum proportion is tied to the subject matter, the students' abilities, the teachers' personality, and the degree to which curriculum or teaching materials have been adjusted to enable students to proceed at their own pace. Although food service programs tend to have a larger proportion of handicapped students and also manage to succeed with many of them, classes in industrial or health occupations are most effective when there are just two or three handicapped students per class.

None of the schools we visited put an official cap on the number of handicapped students in a mainstream class, but in some there is an informal cap of five. One district had experimented with a different kind of cap by counting each handicapped student equal to three non-handicapped students in equalizing class sizes throughout the school.[8] Such caps are helpful because IEP committees do not balance their assignments to different classes.[9] Although it is difficult to make general rules about appropriate ratios of handicapped students to non-handicapped students, vocational administrators and IEP committees should consider these ratios in assigning students to classes.[10]

There are, of course, ways to compensate for larger classes or larger proportions of handicapped students. Paraprofessionals are frequently assigned to large classes, but such staff cannot make up for lack of professional attention to the students unless they are also certified or have received special training. Support services outside of the vocational classroom can also be quite helpful, and the programs we observed did use such strategies. Both of these are elements of a good program, and are discussed below. However, increasing class size in order to save money on teachers' salaries is false economy, because such an action creates a greater need for student support from some other source. It is especially a false economy when the support services cannot compensate for the loss of

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[8] Unfortunately, budget restrictions made this policy impossible to continue.

[9] A cap is also good if, as some believe, non-handicapped students stop taking classes when the percentage of handicapped students in it reaches a certain point.

[10] There might be some concern about reduced access for the handicapped, but there is no point in admitting so many handicapped students to a class that its quality is threatened. If certain classes are especially popular with handicapped students, it is preferable to offer more of these rather than simply to overcrowd the preferred program.

attention by the professional vocational educator, as is all too often the case. Expenditures on special services are no substitute for overcrowded classrooms and overtaxed teachers. Through limits on class size and caps on the number of handicapped students, vocational teacher's case load should be reduced when handicapped students are mainstreamed.

(3) Assistance in the Classroom

The negative impact of large classes on the quality of instruction cannot be completely overcome by other arrangements. However, assistance in the classroom can improve the quality of instruction in small classes and is even more necessary when classes are large. Most of the exemplary programs we visited have found a way to give handicapped students extra assistance in the classroom. We saw two different systems of peer tutoring, many classes with teachers' aides, and a few classes with team teachers. Each form of assistance is appropriate in particular situations, and the relative value of each depends upon staff qualifications. The following section treats each in some detail, because specific circumstances will dictate which to choose.

Peer Tutoring

Peer tutoring is the most common means we observed of providing extra instructional personnel in the classroom. Peer tutors may sound like a poor substitute for paraprofessionals, but if the peer tutoring program is well conceived it can be an important and inexpensive way to improve instruction. Peer tutoring works best in classes where the learning is mostly hands-on: any class with a workshop-type organization or any work experience where employees work in groups is appropriate setting. Such classes provide ample opportunity for joint projects and calls for teaching by example. There are two different approaches to peer tutoring: (1) the informal system, where teachers assign students of varying abilities to projects and work groups; and (2) the formal system, where teachers recruit advanced vocational students to be regular student aides. These approaches can be used simultaneously, but some thought must be given to the selection of tutors and to classroom organization in each case.

The vocational teachers we interviewed who use the informal system of peer tutors do so with care. Although tutoring provides important reinforcement for the student who is teaching, not all students who have mastered a skill are motivated and able to teach others. Teachers who pair handicapped and non-handicapped students together on projects in order to allow for peer tutoring take the time to be sure that this arrangement is working for both students. We saw excellent use of this arrangement in an agriculture mechanics class in Edgerton, Wisconsin. In classes with work groups that change regularly, there is a natural peer tutoring situation: students who understand a concept or have mastered a skill want to help their less advanced colleagues so their project can proceed. We saw this type of peer tutoring work very effectively in a construction carpentry class in San Mateo, California, in an appliance repair class in Miami, Florida, and at a cafeteria run by New York City's FLEX program. The teachers in these classes emphasized that the students doing the teaching seemed to enjoy that role, and that handicapped students also had the opportunity to instruct new students. Informal peer tutoring is only effective, however, when the learning activities are structured so that students naturally work together on a project where each can contribute.

The formal system of peer tutoring essentially uses students as teachers' aides. This is more reliable than the informal system, because the students tutor for the whole class period and on a regular basis. The tutors know that is their job, and all of the tutors

we observed took the job very seriously. They also appeared to enjoy the role a great deal. Usually the teacher who needs the tutors chooses these from among the advanced students he or she has instructed. This student then understands the course material very well, and can work well with the teacher. We saw formal student tutoring systems in Chicago and Wood River, Illinois; the Chicago system is based on paid tutors and the Wood River system uses unpaid tutors. Chicago educators feel the paid tutoring program there has been quite effective. This program provided extensive assistance to over four thousand students during the last school year; two-thirds of those served improved their grades to a C or better from previous records of D or F. The unpaid system we observed was much smaller in scope, with four or five tutors in each area of industrial education. This unpaid system was working well despite the lack of financial reward for the students.

In some ways the unpaid tutoring system is preferable because the tutors are free to help any student who needs it. Since the Chicago tutors' salaries are supported by the handicapped student setaside, tutors were assigned to specific handicapped students rather than to the class as a whole. Although they felt the tutors provided important help to these students, some teachers we interviewed thought there was a certain element of stigma attached to having the special tutor in class. These teachers thought that pay for tutors is an excellent idea but would prefer that the restrictions on tutors' activities be lifted.[11]

Another informal tutoring system deserves separate mention. At Locklin Vocational-Technical Center in Florida's Santa Rosa County School District, we observed adult students in a plumbing class giving extensive tutoring to handicapped high school students. The Locklin Center serves adults and secondary students in the same classes, and the adults' greater age and experience makes them natural tutors. We observed similar interaction at Moore-Norman Vo-Tech Center in Oklahoma, also. Vocational schools that serve both age groups should consider the potential for adult student tutors.

Teachers' Aides

Teachers' aides are often used to reduce teacher work load. The New York City School District mandates that modified classes for emotionally disturbed students have both an aide and a teacher for each twelve students. In most schools, the rules are more flexible but the principle is the same: an aide is assigned when class size or the proportion of handicapped students poses a greater challenge than the teacher should have to meet alone. An aide in such a situation increases the teachers' willingness and ability to serve handicapped students. In courses with more of an academic component (e.g.—child care, nursing assistant, business education), the teacher's aide is essential unless classes can be made small enough.[12]

Unfortunately, teachers' aides are often used where a smaller class would be a more appropriate solution. This is especially a problem when the aide lacks the required knowledge to be of much assistance, a common problem in some program areas. Since many of the available teachers' aides are female and lack any knowledge of industrial arts, teachers in trade and industry programs often have a difficult time finding qualified

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[11] Paying tutors may actually encourage them to take the job seriously and to make a real effort, but it is important that the conditions of their funding not cause their services to be stigmatizing. We shall have more to say about this as a general issue in Chapter 5, but in the case of tutors it appears that the "excess cost" restrictions of the Perkins Act are leading to a situation where the services must be provided in a such a way that they are made less effective than they could be.

[12] We also saw aides used effectively in food service classes.

teachers' aides.[13] Fortunately, peer tutors can play a valuable role in trade and industry classes.

Team Teaching

Team teaching also permits teachers to give special attention to handicapped students. This is a particularly effective solution when teachers with differing strengths are paired together. We saw two kinds of teams: two vocational teachers working together and also the pairing of special education and vocational education teachers.

When there is sufficient demand for a class, pairing a vocational teacher with a strong academic background and a vocational teacher with long experience in the job works well. In states where teachers for the trade and industrial programs can be certified without a bachelor's degree and with a minimum of education courses, the team structure helps compensate for one teacher's lack of classroom organizing skills and knowledge of curriculum materials. The class still has access to the technical skill and practical experience provided by a field-trained craftsman. The team can also compensate for larger classes to some extent, because one teacher can help specific students while the other monitors the progress of the others. Team teaching combined with small classes is ideal. At the Indian Valley Area Vocational Center in Illinois, two auto mechanics teachers of vastly different backgrounds cooperate in serving just twenty-four students. The class size allows both individual attention for the students and high quality instruction for a class that in many schools would be served by only one teacher.

The most unique team teaching approach we saw was in Edgerton, Wisconsin, where each special education teacher has responsibility for designing and teaching an introductory vocational course in cooperation with a vocational education teacher. These "adaptive" survey courses are relatively small, and are aimed specifically at handicapped students. This kind of team could also be used when a large number of handicapped students has been assigned to a particular program. One of the advantages of this team teaching arrangement is that the teachers have joint "ownership" of the class. Its success is important to both teachers. In fact, at Edgerton special education teachers serve most of the mainstream courses as teachers' aides. We saw a similar approach at Mission Trails Regional Occupational Center in California, where a certified special education teacher (in addition to a teacher's aide) was assigned to help in the food service class due to the large number and variety of exceptionalities represented there. More experimentation with team teaching approaches is warranted. Although team teaching can be as as costly as smaller classes, the combination of skills in the introductory class seems to be superior to simply dividing the class in half and assigning a vocational instructor to each. This model of classroom organization is an excellent one and deserves to be emulated.

The Costs of In-Class Assistance

The price of assistance in the classroom ranges from no cost to a second teacher's salary, depending upon the arrangements and the personnel used. The cost calculations below assume no benefit to non-handicapped students, although they usually do profit from the extra in-class assistance.

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[13] There is an inverse relationship between the availability of male teacher's aides and the state of the economy. In southern and central Illinois and in many parts of Oklahoma there are certified teachers working as teacher's aides; in California and Florida, it is usually difficult to keep adult aides at the school for very long.

Student tutors are clearly the lowest in cost per employee, though not always lowest in cost per student served. If the student tutors receive course credits rather than pay then there is no cost; paid student tutors cost approximately $1,300 per year per student tutor. When the paid tutor serves one student alone, then the cost of this service is $1,300 per student. If the tutor is assigned to the class rather than to the student, then the level of individual attention and concomitant costs are both lower: $433 per student for a class with one tutor and three handicapped students.[14] If teachers do not have sole responsibility for recruiting, assigning, and training tutors, there are additional costs in administration and coordination. In Chicago one teacher at each large high school receives a nominal stipend for supervising student tutors. This helps both the tutors and the quality of their assistance. The size of this stipend should vary with the school, but even an extra $50 per week generated enthusiastic response in Chicago.[15] Since each teacher supervises approximately twenty tutors, there is an added cost per tutor of $22 per year.

The per student cost of teachers' aides varies a great deal. The teachers' aides we observed ranged in annual cost from $6,000 per year for a half day and no benefits to $18,000 per year for a whole day and full benefits. For our calculations, we will assume a total cost of $15,000 per year for an aide's assistance in six classes. If teachers' aides are assigned to separate classes of twelve students each, the cost of the assistance per student is just over $200 per year. When the aide is assigned to a mainstream class with five handicapped students and thirteen non-handicapped students, then the cost per *handicapped* student is around $500 per student.

Team teaching sounds like a costly arrangement, but is in fact more efficient than some systems of peer tutoring. At double the usual cost, students in Edgerton's introductory technology courses receive the assistance of a vocational and special educator. Depending upon teacher's salaries in a district, this kind of assistance can be far less costly than most would expect: where the second teacher receives $37,000 in salary and benefits annually, the added cost per pupil in a class of twelve is slightly over $600 per student per year.[16] If the salaried teacher serves in a vocational class with five handicapped and thirteen non-handicapped students, then the cost per *handicapped* pupil of that service is nearly $1500 per student.

The salaries offered to aides at a particular school determine whether using aides is more or less costly than using paid student tutors, and the quality of those aides will determine whether they can be expected to perform like certificated teachers. In general, aides seem more cost effective than student tutors because they are usually assigned only when there are a fair number of handicapped students in a class. Quite appropriately, student tutors serve far fewer students. The services offered by each are not comparable, since a teacher's aide can supervise groups of students and, if trained, can draw on a specialized knowledge of teaching handicapped students. Nevertheless, an aide cannot generally be given responsibility for as many students as can a certified teacher, and many states prohibit the practice of leaving non-certified employees in sole charge of students. In most cases, even a well qualified teacher's aide can simply not provide the same service as a teacher. Usually far less qualified, an aide can only assist with individual students or with small groups. We would caution each school district to assess the quality of the aides

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[14] We did not observe situations where one student had individual responsibility for more than one handicapped student, or fshared responsibility or a class with more than three students.

[15] In many cases, the supervising teachers would have done much of the work for free, and the stipend allows them to feel they can spend more time on this task.

[16] This cost is found by dividing the teacher's annual salary by five, since that is a normal course load for secondary teachers. As with the other cost figures in this section, the salary figures used here are estimates made for purposes of example, not actual salary figures.

it is able to attract at the salaries it can offer, as well as the amount of turnover among teachers' aides in recent years. This assessment will dictate whether more aides should be employed, whether aides should be given extensive in-service training, or whether it is better to rely upon advanced students for most classroom assistance needs and team teaching for classes where intensive professional assistance is needed. A cost comparison summary for paid tutors, teachers' aides, and team teaching is given in Table 3-1.[17]

Table 3-1

Cost Comparison of Tutors, Aides, & Team Teaching

Staffing	Added Cost per Handicapped Student per Year	Assumed Class Size
Tutors: *(supervisor costs included)*		
Exclusive	$1322	N/A
Shared by 3 Students	$455	N/A
Aides:		
Separate Class	$208	12 handicapped
Mainstream Class	$500	13 non-handicapped 5 handicapped
Team Teaching:		
Separate Class	$617	12 handicapped
Mainstream Class	$1480	13 non-handicapped 5 handicapped

(4) Reaching for Multiple Goals

In response to employers' desires for well rounded employees and to the school reform movement, vocational programs have been given a broader scope in recent years. In addition to providing students with the skills of their chosen field, good programs also teach academic skills, social skills, and employability skills.

Most of the teachers we visited feel obligated to provide instruction in academic areas as well as the vocational area. They do not resent students' inability to read some of the textbooks, calculate the angle for a saw cut, or divide amounts for recipes. They merely incorporate such instruction into their curriculum. Many of the teachers drill the students in basic math skills, especially in the use of fractions and various units of measure. Teachers in the more "academic areas" (e.g.—health occupations, child care,

[17] Costs in this table are based on salary assumptions reported in the text.

business, etc.) help their students with reading, composition, and spelling, while teachers in all areas expected to spend some time teaching the basic vocabulary of the field. This expanded sense of obligation is important to the success of students with learning handicaps, because they often need extra help with the academics in order to succeed. Even if there is academic help in the resource room, these students will profit from extra time spent on basic skills during the vocational class.

Many special education teachers told us they worry more about their students' ability to keep their jobs than their ability to find them. Part of the problem is poor social skills, and excellent vocational teachers make a conscious effort to help their students with these. Working in groups with other students is considered important to improving social skills, especially for those students who have been in separate classes for much of their school career. A number of the teachers we interviewed encourage their handicapped students to participate in vocational competitions and student organizations, also arenas for improving social skills. Several of the teachers claimed that mainstreaming itself helps handicapped students build their social skills.

In addition to social skills, keeping a job requires maturity and good work habits. Most of the vocational classes we visited were designed with employability skills training in mind. Vocational teachers also tend to be very serious about their classes: they realize that their students will be applying for jobs in the community and their colleagues in the field will be calling them for recommendations. We were repeatedly impressed with the serious, work-like atmosphere of the vocational classes we visited. Students were "on task" nearly all of the time, very involved with their work, and very concerned with doing it well. This was especially true at vocational centers, where the entire atmosphere is charged by the fact that every student is there by choice. At several of the vocational schools we visited, the presence of adults also seemed to be a factor in the serious atmosphere of the school. The serious atmosphere is very deliberately set by the teachers to help the students develop good work habits and, in the workshops, to contribute to safety.

Job keeping skills can be taught in various ways, but the most pervasive and seemingly effective strategy we observed was when teachers organized their advanced vocational classes like the workplace. In courses with more academic instruction (e.g.—child care or nursing assistant) the work-like situation will come later in the sequence and perhaps only on certain days of the week, whereas in courses with a larger manual skills component the work-like situation may comprise most of the school year. In either case, the classroom is a natural environment for teaching employability skills when students have to account for their time very strictly as a part of their evaluation (through a time clock or log book), when students work with real jobs or real clients, when they are required to wear appropriate uniforms or costumes for the job, and when the work organization approximates the usual arrangements for that trade. We saw a machine shop class run like a "job shop," where students were free to come and go without permission but had to punch in and out when they did and keep accurate records of their progress (Wood River, Illinois). We saw a carpentry class run like a real construction site, where students clocked in, worked in small groups on particular buildings, reported to one of their fellow students as the foreman, had each piece of work checked by the teacher/building inspector, and sold the buildings to clients (San Mateo, California). We saw child care centers located on campus and staffed predominantly by students at various levels of skill and responsibilities (Oklahoma City and Norman, Oklahoma). We saw several food service classes that ran restaurants as part of their instruction (Miami, Florida; Beloit, Wisconsin; and Costa Mesa, California). In each of these classes, and in other classes as well, academic instruction was emphasized whenever necessary. But on days when work had to be done in the "shop,"

the classroom took on the tone of a work place and employability skills were reinforced strongly.

(5) Instructional Materials

It is always important that the instructional materials used in a class be appropriate to students' abilities. Educators we interviewed disagreed about whether instructional materials already approved for the usual vocational sequence should be altered, especially in the mainstream setting. Since state mandated textbooks vary in reading level from the seventh grade level to the eleventh grade level, the need to alter instructional materials varies a great deal by program and state. At the North Putnam-Westchester BOCES in New York, the course materials used in the modified classes are the same as those used in the equivalent unmodified classes. In courses where adjustments are made to instructional materials, these are usually changes in reading level rather than content. Very few of the teachers we interviewed tried to use different materials for handicapped students than for the other students in the mainstream classes, primarily because most had already adjusted their instructional materials to accommodate various skill levels. This adjustment would usually be necessary even without mainstreaming, since vocational students range greatly in ability. Teachers often use pictorial materials, and choose workbooks over textbooks. Many teachers simply use very little written material, thus avoiding the problem of reading ability. At the Mission Trails ROP, the food service program is taught entirely through filmstrips, oral explanations, and special projects; only when they must follow recipes is students' reading ability a problem. This strategy has enabled that program to serve a large number of handicapped students, some of whom have very low academic skills. This program has an excellent placement rate in commercial food establishments.

Some teachers have made notable efforts to adjust instructional materials to their classes. With the assistance of a special education teacher, the machine shop teacher in Wood River, Illinois completely rewrote the learning packets for his introductory course to achieve a fifth grade reading level. At Edgerton High School, the vocational and special education teachers with joint responsibility for each introductory course modify the course materials together. The plumbing teacher at Locklin Vocational-Technical Center is gradually replacing all of his learning packets with his own videotapes and filmstrips. All of these teachers are convinced that more accessible materials have an important effect on their students' success. Producing such materials, however, requires much time and expertise.

A substantial financial commitment is needed in order for most vocational programs to be supplied with revised teaching materials. This commitment has been made statewide in Oklahoma, where each of the vocational centers has a large curriculum and instructional development staff. These staff work closely with vocational teachers to develop instructional materials and individual learning packets in highly pictorial formats. The facilities housing these staff include television studios, videotaping equipment, and computer-assisted video disk equipment. In addition, teachers often have a tenth month in their teaching contracts so they can develop or adapt curriculum and instructional materials for handicapped students.

Teachers frequently lack the knowledge or the time to alter materials, even if they have an interest in doing so. In some cases the state or the district may even prohibit the use of any but the mandated textbook. It is also difficult for many vocational teachers to locate existing low level reading materials in their field, although there are plenty of instructional packets for basic skills in vocational education. There is no network of information about special materials within the trade: teachers rarely receive information

from vocational education supervisors at either state or district level, nor do their professional associations provide any assistance. After a long search, the appliance repair teacher at Miami Jackson High School obtained a less demanding textbook for his non-mainstream class from a major appliance company Special needs consultants would do well to examine the teaching materials that are used and to find suitable alternatives for at least the introductory courses.

During the course of the site visits for this research, we became concerned about the lack of communication among teachers in many large districts. It is rare for teachers to share information about instructional materials to use with handicapped students or about alternative ways of teaching the recommended curriculum. Characteristically, each teacher is completely isolated from others in the same vocational program area, except in those cases where more than one teacher at a school teaches the same class. Even when a teacher has spent considerable time on a set of instructional materials or developing a teaching sequence, teachers at other schools often do not hear about these efforts. It would not cost much for administrators in large districts to set up district-wide meetings to share approaches and materials among those who teach the same course. Such activity would benefit all vocational students, since instruction would be improved as good instructional materials are shared. This effort could particularly benefit handicapped students and inspire greater activity on their behalf if there were an emphasis on that task at the district level and some recognition given to teachers who share their materials and techniques with others.

Cost of Modifying Instructional Materials

In most cases we found that there were no direct costs to providing modified instructional materials, simply because most of the teachers we interviewed used the same materials for all of their students or created their own materials for students with special needs. The cost of teacher created materials has to be figured in time lost to other tasks, and is therefore difficult to calculate. Some teachers mentioned the burden of time that this task has placed on them, cautioning that they have considerably less time available than they need for reviseing instructional materials. Teachers without families and with smaller classes have found this time more easily than those who must work during the summer, who have other obligations, or whose teaching load is large. Administrators should realize that when a dedicated teacher's case load is reduced, that teacher is very likely to re-invest this time in improved instructional materials, thus providing a benefit to present and future students.

Some teachers we interviewed hoped to obtain summer stipends so they could spend more time developing their courses. If a school district wants to obtain new materials for teaching special needs students, one route to this goal would be to fund grants for vocational teachers wishing to improve their curriculum or design new instructional materials. A district could set aside several stipends, each equal to half of a starting teacher's salary in the area for a two month period. These could be awarded on a competitive basis each summer. Such grants would provide an opportunity to change the classroom curriculum or design instructional materials without violating any local traditions of teacher autonomy.

A few teachers felt that an increased allowance for supplies was needed for students with handicaps. In a plumbing class, for example, a lower functioning student might have to use twenty pieces of copper tubing to master a skill that would require a non-handicapped student to use only one or two pieces. The amount of additional money needed depends upon the materials used and the students.

(6) Teaching Strategies

There is much discussion in textbooks about "vocational special needs" dealing with the need to adjust one's teaching strategies to the student's exceptionality. These texts suggest using "multiple modalities" to reach the student, altering oral explanations to avoid the use of fractions and abbreviations, and so on.[18] Yet when we observed effective teachers, their classroom work was not distinguished by specific teaching strategies. Certainly, they were good teachers, and as such gave very clear explanations with plenty of visual examples. Furthermore, they were very skilled in their trades, and that training often helped them alter their teaching materials and strategies. Yet we did not observe these teachers using a greatly different "teaching technology" than they did before handicapped students joined their classes.

What these teachers share is not technical expertise in teaching special needs students, but their attitude and basic approach to their students. Although some of the teachers we observed have taken special instruction in teaching handicapped students, most have little specialized knowledge in that area to guide them in an alteration of their teaching style. Among both those who have such specialized knowledge and those who do not, a majority of the teachers we interviewed stated it is not necessary to design special teaching strategies for mildly handicapped students in mainstream courses beyond the introductory level, because these students can succeed without such changes when there are appropriate support services. In fact, many of these teachers emphasized the importance of avoiding changes in their approach with handicapped students. They feel that different treatment might stigmatize these students and keep them from learning how to function in a job setting where employers treat them no differently than other employees.

Several of the teachers we observed claimed that one secret to their success with handicapped students is simply that "I treat them the same as everybody else." These teachers also seemed to be unusually aware and tolerant of individual differences in personality, ability, and interest. Their classrooms have a very serious atmosphere, but they are also very kind environments because each is an atmosphere in which mistakes are accepted.[19] Because vocational education teachers prize skilled work and perfection in the craft, we were struck by the fact that these teachers have not allowed that value to overwhelm their realization that students learn by making mistakes. We observed these teachers to be incredibly patient, and we never had the impression that their patience was strained. However many times they have to explain a concept, or however many times they have to demonstrate a skill, they approach the task with a freshness and an interest that is truly remarkable.

When we asked vocational teachers about the key to their own success with handicapped students, nearly all of them mentioned some attitude or behavior involving students' sense of self worth. Several mentioned their caring and commitment to seeing each student develop to his or her fullest ability, and their behavior in the classroom amply verified that commitment. They commonly asserted their belief in giving extra time and attention to students with learning handicaps, not so much because they need extra help—although that is certainly an important reason to do it—but because many of these students

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[18] See Michelle Donnelly Sarkees and John L. Scott, Vocational Special Needs, (Columbia, Mo: American Technical Publishers, Inc., 1985); also Bill R. Gearheart and Mel W. Weisbrahn, *The Exceptional Student in the Regular Classroom*, Third Edition (St. Louis: College Publishing, 1984). In a sense, vocational instruction is naturally suited to students with special needs, since it involves mainly hands-on learning activities.

[19] For the contrasting views of most vocational educators, see Donal Merachnik, "Understanding the Needs of Vocational Educators," *The Journal of Vocational Special Needs Education*, V. 6, Winter 1982, pp.3-7; and Sam Minner, "The Influence of Educational Labels and Behavioral Descriptions on Secondary Vocational Educators," *The Journal of Vocational Special Needs Education*, V. 4, Winter 1984, p.4.

have a higher emotional need for the teacher's attention.[20] These professionals feel that it is extremely important to show a handicapped student that he or she is a valuable individual. The special education teachers we interviewed referred to this as the "self concept" issue; vocational education teachers we interviewed simply stated that these students need to know that they are important to someone. Certainly many of the vocational teachers we observed are very warm, loving individuals who are able to convey their approval and commitment to their students more effectively than most professionals. We think that this quality is an important key to the success of many exceptional teachers, and especially to the success of those who teach students with disabilities.

The excellent teachers we observed are very empathetic, but their approach to the students has another side of equal importance. In addition to being unusually warm and supportive, all of the teachers we interviewed have very high standards for their students. Although they care for their students deeply, they do not lower their performance standards in order to permit the learning handicapped students to get better grades. They truly believe that these students can achieve at a high level, and they make their expectations clear. They do not expect every student to perform well on all tasks, nor do they expect that all will learn the skills quickly. They do expect the students to try their best, and they make this very clear. High expectations, combined with faith in the student and ample evidence that the teacher likes the student, appear to make a huge difference in the ability of learning handicapped students to acquire occupationally specific skills and to perform in a work-like setting.

Warmth and empathy are difficult to teach, but administrators can create environments which encourage teachers to exhibit these qualities. Too many of our secondary schools are environments in which only a truly remarkable person will have the energy to exhibit warmth toward each student. The quality of student-teacher interaction in the vocational classroom could be most improved by controlling class size and by more in-service training for vocational teachers. Class size is important because teachers cannot make their students feel important if large classes dictate that they have only a few minutes to spend with each student. In-service training is also important because vocational teachers must see how their apparent attitude and acceptance affects their students, particularly exceptional students. Many vocational teachers do not realize, as one special educator said, "the power they have over these kids' self-image." Several of the remarkable vocational teachers we interviewed mentioned that it had been difficult for them to convey their concern more directly to their students; these teachers had always cared about their students, but found it difficult to show this. They had to learn that their behavior should convey and, if necessary, even exaggerate, their commitment to each exceptional student. If more teachers were aware of how their behaviors affect students with low self-concepts, they would take greater care to see that those behaviors reflect the commitment they do feel. The seemingly "innate" qualities of the exceptional teacher are partly a product of knowledge and working conditions. These qualities will be common to more teachers when classroom conditions are better and teachers have been made aware of their effect on the exceptional student.

Conclusion

In our investigation of what works in vocational education for handicapped students, we found that an individualized, competency-based curriculum with multiple exit points works extremely well. However, we found many examples of excellent programs

[20] Several of the teachers mentioned that this was an important intrinsic reward for serving these students well, because the effort was appreciated and reciprocated.

without a fully developed competency-based system. Excellent vocational programs tie each student's achievement to occupational outcomes, however informally. Good programs are designed so there are multiple opportunities for students to enter the mainstream from modified vocational courses. In addition, there are multiple opportunities for students to leave the mainstream to return to modified courses or to leave school for employment appropriate to their skill level. A vocational sequence which is effective with the mildly learning handicapped will provide these options, so that students can learn as much as their interests and abilities allow, and in an appropriate classroom setting. Effective vocational courses at all levels will provide instruction in academic, social, and employability skills as well as in specific occupational skills.

Observation of excellent vocational teachers demonstrated that their personal approach is far more important than their technical knowledge of special education. This is an important finding, because it indicates that "consciousness raising" is at least as important as technical training. While policy directives cannot make teachers more sensitive or understanding, policy can indeed improve teachers' working conditions so they will have the time and the energy to be more responsive to students needs. Reducing teacher burden is of paramount importance: the size of mainstream vocational courses must be reduced, caps placed on handicapped enrollment in mainstream classes, and regular assistance made available in all vocational classes where it is needed. Only when these changes are made to the classroom will mainstream vocational classes be a viable option for the majority of handicapped students, during the first year of training for some and during the second for many others.

The student's experience in the vocational class itself is of primary importance for the quality of the training received. However, vocational programs will not reach their highest potential with handicapped students unless they accept students into appropriate vocational classes, provide essential support services outside the classroom, and provide needed transition services. These components of an exemplary system are discussed in the next chapter.

CHAPTER FOUR

SUPPORTING THE VOCATIONAL CLASSROOM

When we asked our respondents to describe systems providing high quality vocational education for handicapped students, many of them denied that any particular element or organization of elements was best. They often responded by saying, "It's the people that make the difference," or "So much depends on the teacher." One administrator insisted that he just hires the right people and they do their job. These statements sound like excuses for lack of administrative direction, but it is true that particular individuals, especially teachers, do make a huge difference. Educators place great faith in the importance of individuals, as well they should. Outstanding vocational teachers are clearly important to the excellence of the programs we studied.

There is, however, a great danger in relying too much on the energy of particular individuals to make vocational programs work for handicapped students. The first problem is that most individuals will not redesign their programs to meet new needs, but must have some motivation and guidance for trying something new. The second danger is that those extraordinary people who do start new programs may leave their original positions. Dynamic individuals set up programs according to their own operating style, then pass these on to successors who may find it difficult to continue that particular approach. Educational systems should provide more reliable services over time and across classrooms, rather than relying upon the initiative and unique qualities of inspired teachers or administrators. We do not mean to denigrate the importance of individual educators, only to emphasize the importance of their institutional context. An exemplary program must achieve excellence on both levels.

By observing exemplary programs, we were able to identify the "system elements" necessary for serving handicapped students in vocational education and the optimal organization of those elements. Programs that can succeed over a longer period of time and across a range of vocational areas share most of the following characteristics:

(1) professional development incentives for vocational teachers;
(2) a vocational assessment tied to the instructional program;
(3) prevocational instruction that builds students' confidence and independence;
(4) a paid work experience program tied to the vocational education;
(5) transition services, including placement and follow-up;
(6) a high level of support services from learning specialists;
(7) regular communication between special and vocational educators; and
(8) strong administrative support for serving handicapped students.

These elements make the success of particular individuals "contagious" so that entire schools do a more effective job. This chapter outlines how good vocational programs achieve each of these goals.

(1) Professional Development for Teachers

After interviewing nearly three dozen teachers who are serving handicapped students well in the vocational classroom, we concluded that the best approach to professional development is to facilitate rather than regulate. Some states now require a course in special education for the vocational certificate, but we do not feel that states should require such a course of already certified teachers. Several of the teachers who

have taken university training in special education complain that these courses are too theoretical, failing to offer the practical advice they need. Rather than requiring certified teachers to take particular university courses, a school district can set up workshops geared to local needs and help teachers pursue their own professional goals. Three kinds of efforts can improve vocational teachers' ability to serve handicapped students: inducement for individual teachers to pursue further training, in-service instruction for vocational teachers, and grants for special teacher efforts.

Encouraging Further Education

Vocational teachers should be strongly encouraged in their professional development, although they should be left to choose the exact nature of the courses they pursue. The Mission Trails Regional Occupational Center in California requires teachers to attend at least one relevant workshop per year, paying for enrollment and travel expenses. Some school districts have arranged with local colleges to offer courses in special vocational needs education that qualify as credits for recertification or salary increases. The Chicago Public School District has done well in seeing that such courses are offered at various high school campuses throughout the city, and at informing vocational teachers about these courses. Illinois' Sauk Area Career Center hosted a class through the University of Illinois' Leadership Development Program, bringing the university instruction to the teachers.

In-Service Training

Although the excellent teachers we visited had taken the initiative to pursue extra instruction, schools interested in improving the capacity of their entire vocational staff to serve handicapped students should also offer in-service training. Most of the schools we visited made such an effort when they first started mainstreaming large numbers of handicapped students. The teacher training effort at the Sauk Area Career Center in the 1970s is a good example. The University of Illinois offered a university course at the career center which counted toward salary increases and the Center also organized an intensive effort of follow-up in-service. All of these workshops were conducted during the teaching day, with special educators and vocational educators alike as participants. Teachers were surveyed for their particular needs and interests so that both the workshops and the class could be made immediately useful as well as theoretically valuable. Such an intensive effort expands teachers' repertoire of teaching strategies and their knowledge about special education students. In addition, it signals to the entire faculty that serving special needs students is an administrative priority.

Few of the schools we visited have offered much in-service training in recent years, due to the cost of releasing teachers. We recommend continuing in-service, if not during the teaching day then at some other convenient time. In Edgerton, the joint department meetings with special and vocational educators provide time for sharing expertise. Special educators should attend in-service training for vocational staff, as should any other personnel who regularly teach or coordinate services for special needs students in vocational education (e.g.—counselors, teachers' aides, supervisors).

A number of our respondents feel the most effective in-service programs involve "teachers teaching teachers" rather than outside experts, because teachers orient their instruction toward practical solutions and local needs. Participants feel more free to ask questions, see the value of the suggestions more readily, and are more easily able to contact those conducting the workshop for later discussion and advice. This kind of workshop also provides local recognition for teachers who have become expert enough to instruct

their colleagues; given the low number of extrinsic rewards for teachers, this kind of recognition is very motivating.

Some schools take an "informal approach" to in-service training by asking the vocational special needs coordinator or an interested special education teacher to consult regularly with teachers about their teaching strategies and monitor the progress of handicapped students. The specialist usually also spends time in the vocational classroom assisting students and serving as a model for vocational teachers. This approach is very effective because the assistance is available at the time the teacher is most receptive: the specialist can wait for the "teachable moment" and then provide the appropriate guidance.

This approach to professional development seemed to work very well at the schools we visited, but the "informal approach" can easily be a euphemism for extremely low levels of support and communication. For the informal approach to work, there must be a high specialist-student ratio and a high specialist-teacher ratio. Otherwise specialists will not have adequate opportunity to get to know the students and to consult with each vocational teacher. The three schools in which the informal system worked best were all quite small. Larger schools must offer more formalized in-service training to convey information and to establish better contacts between those vocational teachers who need help and those who can provide that help.

Teacher Grants

As previously noted, Oklahoma's vocational teachers are eligible for a ten month contract so they can develop new curriculum and instructional materials. Another strategy is grants for teachers who apply to work on such projects. A small investment can pay off very well for special needs students when teachers are given such grants. Those teachers who had developed new instructional materials or redesigned their courses had spent a great deal of time on this task, more extra time than most teachers are willing to spend on their work. Some of the teachers we visited wanted to improve their courses, but found that financial necessity drove them to work at their trade in the summers or evenings. While grants cannot compete with the salary available from a second job, they can increase the probability that a motivated teacher will choose to spend time on course development over other pursuits. Their symbolic value as a reward for excellence may well be quite motivating. As a condition of receiving the grants, teachers can be required to share their accomplishments with their colleagues, thus multiplying the effect of their efforts as they share ideas with others.

The Costs of Professional Development

The costs of professional development for vocational teachers have varied a great deal from year to year in most of the schools we visited. In those districts with a regular allocation for professional development, the cost of supporting independent professional development was highest at California's Mission Trails ROC, where the annual budget sets aside around $12,000 to reimburse thirty-three teachers for the registration and travel costs associated with seminars, workshops, or courses approved by school administrators. Since the reimbursable activities are not confined to those relating to special needs education, the amount of the total directed at these issues varies from year to year. Teachers at Mission Trails are required to attend at least one approved workshop per year; at schools without such a requirement, the funding level could be lowered to account for non-participation.

Local education agencies would do well to budget an average of at least $100 per year for the support of vocational teachers' professional development in areas of individual

interest. This amount would be used to defray transportation costs and registration fees of workshops or courses approved by the vocational education department. Any learning experiences appropriate to the teachers' work should be supported, but perhaps the rate of support could be greater for workshops or courses dealing with special populations or teaching strategies for slow learners.

Professional development for teachers must not be neglected if we expect improvement in the service to handicapped students in vocational education. Local education agencies can make a significant impact on the quality of that service by encouraging vocational teachers to pursue their own professional interests, providing practical in-service training, and supporting their efforts in curriculum development.

(2) Vocational Assessment and Placement into Vocational Programs

The school districts we visited diverge widely in the extent of the vocational assessment provided to handicapped students.[1] Most of the programs we visited based placement decisions on the professional judgement of special education teachers rather than vocational evaluators. These teachers "assess" the abilities of each student and the educational options in deciding whether to recommend vocational education. For students who can profit from vocational education they also "assess" such factors as the the quality and attitude of the teachers, the size of the class, and the difficulty of the instructional materials. As one specialist put it, "You look at all the factors affecting placement, listen to what the student wants, and then make your best guess regarding an appropriate placement." This informal assessment is a common pattern in good vocational programs, leading us to question whether extensive reliance on a more "scientific" assessment is necessary.

The most important quality of a vocational assessment is that it be a process rather than a product.[2] Instead of assessing once, schools should provide ongoing assessment throughout the student's academic and vocational education. First, assessment information should be used to advise students and parents on the desirability of pursuing particular programs and to inform counselors as to the most desirable placement for each student. In addition, the results of an independent assessment can demonstrate to vocational teachers the strengths as well as weaknesses a particular handicapped student may have in the skills required for the class. Most important, the assessment results, and the comparison between these and the skill levels desired for the vocational class, should be communicated to not only to the vocational teacher but also to any support staff and special education teachers responsible for the student. Then each professional with responsibility for a student can see which particular areas need special work and where the student is making progress. The school district in Lake Mills, Wisconsin is implementing an assessment plan that will begin in the sixth grade and continue through the twelfth grade year. The results of each assessment will be shared with special educators, vocational educators, and counselors, as well as with the parent. At the O.T. Autry Vo-Tech Center in Enid, Oklahoma, the instructional units in the Institutional and Home Services course include materials designed to help students assess their own vocational aptitude and interests.

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[1] All of these districts emphasize assessment more than in past years, thanks to Part A, Section 204(c)(1) of the Carl Perkins Act requiring that all handicapped students in vocational programs be provided a vocational assessment. "Each student who enrolls in vocational education programs...shall receive— (1) assessment of the interests, abilities, and special needs of such student with respect to completing successfully the vocational education program."

[2] Andrew Halpern, "Transition Issues that Affect Research on Evaluation," in Robert E. Stake, ed. *Issues in Research on Evaluation in Transition*, Transition Institute at Illinois, 1986, p. 36.

Successful programs use a variety of assessment techniques, tying the results of the assessment to the instructional program.

Formal assessment is an integral part of the educational process at the Mission Trails Regional Occupational Center in California. The Center assessment staff are responsible for the success of the students they place in vocational program. The assessment staff are also the support staff, so they use assessment results to develop appropriate support services. They monitor students very closely during the first year in a mainstream classroom; if any problems develop, they intervene quickly. Before the situation deteriorates too badly, assessment staff provide particular support services, recommend specific teaching strategies, perform further assessment, or try a different placement. The assessment staff are not isolated in a special center, but are an integral part of the vocational program.

We visited schools where special education teachers familiar with the student make informal assessments and make placement decisions. These special educators perform the same monitoring, support, and placement services as the assessment staff at Mission Trails. This tie between assessment and service is crucial to the effectiveness of assessment, not the nature of the assessment itself. An assessment isolated from the instructional program is of little use.

Costs of Vocational Assessment

Vocational assessment can be quite expensive, or can cost very little. Brief assessments given through group testing can be incorporated into a regular class, costing very little in extra funds. Paper and pencil assessments given on a pull-out basis are still fairly low in cost compared to individualized assessment. Schools interested in a particular approach must price the materials required; plan on the staff time to administer the tests, evaluate the results, and communicate the results to vocational teachers or counselors. Estimates of assessment costs must also take into account the difference between the initial investment and the marginal cost of assessing another student once assessment materials are purchased or designed by local staff.

We found it difficult to estimate assessment costs because many programs are new and others fund assessment out of the same line item as they do other activities. Project Work Ability in Huntington Beach, California spends $32 per student on the assessment needed for its transition efforts.[3] Assessment for placement into vocational programs is usually more costly. In most cases where the school could provide a per pupil cost, this ranged from $60 to $80 once assessment materials have been purchased. At Mission Trails, the average cost per student served by the assessment center is $242, but this cost includes the costs of a half day assessment for each student, a pro-rated share of follow-up assessment on ten to fifteen per cent of the students, and support services provided to the student by assessment staff. While the start-up costs would be greater due to the purchase of testing materials, this cost is surely adequate to support an extensive assessment and related service component once an assessment center is equipped. Due to the cost of many assessment tests, we would caution schools to purchase only the level of assessment which can be incorporated into the instructional program and to budget for the support services

[3] California's "Project Work Ability" brings together vocational educators, special educators, representatives of the employment development department (EDD), and vocational rehabilitation (VR) counselors for the improvement of vocational education and placement. Project Work Ability coordinators find jobs for their clients, and also provide them with vocational assessment and counseling. The Work Ability coordinators have access to money for stipends when students are difficult to place, but many coordinators are reluctant to use these for fear that employers will terminate the student when the stipend runs out. Although schools are not required to participate in the program, every school we visited in California was served by a Work Ability coordinator.

which assessment results indicate are necessary. An assessment is only as useful as its influence on the vocational program.

(3) Prevocational Instruction

In most of the programs we visited, prevocational courses are a part of the special education curriculum. The most effective of these concentrate on "self-development:" bolstering students' self-esteem, sense of capabilities, expectations for success, and willingness to persist in the face of failure. In addition, these classes include some career exploration to inform students' program choice. Some prevocational courses try to teach "employability skills," but this is difficult without a job-like situation for modeling behavior. The best approach is to focus on self-development and career exploration.

We believe that job *keeping* skills are best taught as part of the vocational class or when the students go to a job site with the class for a "clinic" experience.[4] Good teachers see that the students practice as many of these skills as possible in the classroom setting (punctuality, wearing a uniform, performing tasks responsibly, etc.). Employability skills become a major focal point when the course includes independent work on job sites. Whether or not a student enrolls in vocational courses, paid work experience provides a final opportunity to learn employability skills before graduation. A focus on employability skills during prevocational courses is premature.

A focus on job *finding* skills in the prevocational setting is also premature.[5] Specific job finding skills are best taught at the end of the high school years as a concluding unit to the vocational sequence or as a separate workshop. These skills are far more easily learned than are job keeping skills, since they involve short term behaviors and can be taught through established methods. Job finding skills are a part of the "transition" process; they do not have to be a part of the prevocational or regular vocational curriculum but can be offered separately.

Costs of Prevocational Instruction

Prevocational classes should cost little extra once they are instituted, since they should be offered as part of the special education curriculum. However, there will be some initial costs for purchasing or assembling instructional materials, for curriculum development, and probably for teacher training. The San Mateo Union High School District is making an effort to see that prevocational courses are offered as part of the special education curriculum at all six of the district's regular high schools; these courses are usually taken by students who are not mainstreamed in vocational education, and so bear the full burden of teaching employability skills. The amount spent on this effort in recent years has been approximately $30,000 per year, exclusive of teacher's salaries for time in class.[6] This cost, higher than it would be for an equivalent effort in a smaller district where coordination issues were less prominent, or in many other parts of the country, where staff salaries are lower. The extra costs of initiating a prevocational

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[4] In most health assistant and child care programs, instruction in the first semester is entirely in the classroom and has a large academic component. The clinic experience, involving trips to a job site for practice, may be the first opportunity for students to practice employability skills.

[5] Prevocational classes devoted to job finding can be valuable when they use these units to explore career exploration and self-development.

[6] Although that cost is sometimes included as part of the expense of prevocational instruction, this is only the case when teachers with already full class schedules are paid an overload salary to take on one more course.

curriculum should not last more than two or three years; after this effort the cost of maintaining these courses should be no greater than for other classes.

(4) Work Experience

Every handicapped student who is not planning to pursue a postsecondary education should have the opportunity to participate in a paid work experience program. Whether or not it is connected to any specific occupational training, work experience will be of great benefit to handicapped students student. This realization has spurred many school districts to develop work experience programs for handicapped students; California's Project Work Ability serves handicapped students on the basis of teacher referrals. The special work experience programs in many schools target those who have not been able to succeed in the vocational program. It is important that all handicapped students participate in work experience, not just those youth with no advanced skills training.

Many vocational classrooms are organized like a work place, but students' employability skills can still benefit from participation in a work experience program. There are important incentives to developing those skills in the work experience situation that do not pertain to the classroom situation. Only on the job do students get to and from work on their own, get along with other employees on a daily basis, know that employers are counting on their performance, and feel the incentive of real pay for real work. If the vocational program does not include work experience, then handicapped students should be offered the chance to participate in the separate work experience program. That experience is most helpful if tied to the student's training and organized by a teacher who is familiar with the student's abilities, but any work experience is preferable to none.

However work experience programs are organized, it is important that the individuals in charge of placing students have the time and entrepreneurial skill to get local employers involved. New York's High School of the Fashion Industry has developed an excellent program of work experience for its students, partly because the principal there has such good employer contacts and can "sell" them on the program. In either case, a professional who understands the students should be in charge of placing them in jobs, counseling them, and monitoring their behavior through the employer. In Beloit, Wisconsin, the vocational teachers coordinate their own students in work experience. California's "coop" program model is excellent for this purpose with students in specific vocational programs, since experienced vocational teachers do the placement and are given time during the teaching day to monitor and counsel their students. The cost of work experience programs is discussed below, along with the costs of transition services.

(5) Transition Services

Handicapped students need special help making the transition from secondary school to the world of work. As part of the transition process for each student, the local education agency should have a formal mechanism to bring together all professionals responsible for that student, preferably also with the student and his or her parents. For students pursuing special diplomas, the Dade County Public Schools have designated the twelfth grade IEP meeting as a "transition conference" to meet this need. Professionals present at this conference include the student's vocational instructor, special education teacher, and placement specialist. Conference participants can discuss alternatives, evaluate the results of the latest vocational assessment, and make sure each person is familiar with

his or her responsibility in facilitating the transition process. These transition conferences should be required for each handicapped student, since they provide an opportunity for school personnel to pool their knowledge of the student and the environment to help students plan for the future and identify sources of assistance.

The most important transition service of all is job placement. Most school districts have only recently recognized their responsibilities in that area. A number of the schools we visited still do not officially provide special placement assistance for handicapped students, but those who do not feel that they should move ahead in this area. The Dade County Public Schools are making an exemplary effort in placement, having hired two full-time job developers to find employment for all handicapped seniors in vocational programs who wish to work during the coming year. These job developers are a part of the vocational education department, funded by the Perkins setaside. Since placement is their sole responsibility, they have time to develop contacts with employers and monitor the placement of last year's graduates in addition to finding and placing graduating seniors.

Unfortunately, placement responsibility is often given to someone who has little time for it. Some vocational schools require that teachers place all of their graduating seniors. When teachers to do this job "in their spare time," only the most dedicated will make special efforts for their handicapped students. Such an allocation of responsibility works best in the separate vocational programs, with small classes. The teacher of Institutional and Home Services at Oklahoma's O.T. Autry Vo-Tech, for example, has been very successful at placing students from this separate vocational program. She has small classes and excellent employer contacts from her past professional experience. For teachers with larger classes, and for those who have spent most of their careers in the public schools rather than in the industry, placing students is a large burden.

Several of the teachers who participated in this study take on this responsibility gladly and are committed to placing their handicapped students, but it is unreasonable to expect all teachers to behave in this fashion. If teachers take on this responsibility, they should also be paid for the service. In addition, their performance should be evaluated, including their success with handicapped students. One solution would be to give vocational teachers the option of contracting to perform this service for additional payment. Otherwise the responsibility should rest with another school district employee whose work load can reasonably include this task.

Enrollment in postsecondary education is a valid outcome of placement efforts, and exemplary programs take this into account. Most of the vocational teachers we visited encouraged their students to pursue further education, as did those responsible for student transition. In the case of the area vocational center or regional occupational center, formal transition efforts for some students can be minimal because they stay at the same school. If students plan to attend another institution for their advanced vocational education, then there must be school to school communication about programs and application processes, as well as school to student communication about postsecondary education. Wisconsin's Beloit school district has maintained particularly good communication with local technical schools and community colleges through formal articulation agreements as well as personal contacts.

Placement services can help compensate for handicapped students' deficiencies in "job getting skills." Given many handicapped students' deficiencies in "job *keeping* skills," transition programs should engage in follow-up as well as placement of handicapped students. California's Project Work Ability is an important program not only because it places students, but because it provides other transition services as well. The

Project Work Ability coordinators we visited give their clients a vocational assessment to assist in placement, counsel students during their critical first weeks on the job, and try to find other jobs for those whose placements do not work out. Project Work Ability is a step toward the more complete transition efforts which are needed by handicapped students moving into full-time work. Project Work Ability and similar efforts should not only be encouraged, but extended to cover all handicapped students who wish the service.

One special education official we interviewed stated that "Transition is an eight to ten year job." Anecdotal evidence from a number of schools indicates that handicapped students are more likely than others to need help finding work when they lose their jobs or decide to leave their postsecondary training. In talking with teachers and school officials, we became persuaded that schools should provide or arrange extended transition services for handicapped students, although eight to ten years is not likely to be feasible. We heard about students who came back to their school five years later and asked their vocational instructor to help them find another job. For every student who felt free to make that visit, there are probably several who needed the assistance but did not ask for it.[7]

Where schools do offer extended transition services, students have benefited. At New York's Clara Barton and Fashion Industry High Schools, job coaches not only place students but also try to stay in contact with them for an extended time.[8] We learned about another notable effort towards continuing transition services at Francis Tuttle Vo-Tech in Oklahoma City, Oklahoma. Teachers of the Building and Grounds Maintenance program have established an Alumni Association and Support Group for their students, former students, and parents. This group meets monthly to discuss a wide range of issues related to school and post-school transition to employment. Responsibility for coordinating the meetings is shared with the local Mental Health Services office, and a newsletter is sent monthly to all members. The alumni association is an admirable solution to the long term transition problem, since students never lose their "eligibility" and since they become familiar with the organization before they leave school. Students know where to go for help should they need it, and parents can likewise utilize the group's knowledge when they need it.

A special transitional program of work experience has been tried in New York City in recent years. The "FLEX" program serves handicapped students ages eighteen to twenty-one who have not graduated from high school. Because these students are really too old to be in a conventional high school, and because they have already failed in the regular school program, FLEX takes them out of the school setting and places them at a job site for a twenty-week program of work experience and instruction. The amount of academic instruction varies with the job; it is job-related and takes place at the job site. The FLEX program has served about 700 clients, 600 of whom have found permanent jobs or continued their training.[9] This program has succeeded with a group of students for whom the regular public schools have already failed, and can serve as a model for programs of last resort. FLEX has been so successful that it has become a permanent part of the New York City school system as an alternative high school with many sites.

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[7] Some teachers suggested that follow-up was the responsibility of the local vocational rehabilitation agency, but these agencies rarely serve the mildly learning handicapped. Even when the agency does serve this group, there is resistance to using it. In Illinois any special education student who graduates or ages out becomes eligible for rehabilitation services, but the stigma attached to these services prevents many of the mildly handicapped from utilizing them.

[8] At Clara Barton, the job coaches are students training to be vocational rehabilitation counselors. This arrangement contributes to better coordination between the schools and the rehabilitation agency as well as to the future of the students coached.

[9] Students may take another twenty weeks of training if they wish.

The Costs of Work Experience and Transition Programs

Work experience and transition programs vary greatly in their costs, depending upon the number of stipends granted by the school district and how carefully the school district supervises student workers. At one extreme is New York City's FLEX program, costing $5,342 per student per semester for staff and stipends.[10] Remember, however, this amount represents the total cost of educating these students for twenty weeks, providing transition services, and supplying wages. In addition, the clients selected for FLEX are precisely those who are most difficult to serve. The twelve-to-one ratio of staff to students at all job sites makes this project more expensive than other work experience programs, and its stipends make it more expensive even than modified vocational education classes. Its cost is partially offset by the state reimbursement increase following from its 90% attendance rate with a group of students who have been in the habit of skipping school.

Other work experience and transition programs are less ambitious, but can still provide valuable services for moderate costs. Project Work Ability in Huntington Beach, California manages to serve approximately 350 students for an average annual cost of between $330 and $350 per student.[11] In this program there is less school supervision on site; employers are almost entirely responsible for the content of the training provided to each student. Yet only 8% of the 1985-86 graduates were unemployed at the time of this year's follow-up survey: 42% were employed full-time, 17% employed part-time, and 26% enrolled in a postsecondary institution. For the salary, benefits, and travel costs of two professionals, the Dade County Schools have been able to serve nearly 200 handicapped students per year, even during the program's first years. Of the 198 students eligible for placement in the spring of 1986, 45% were placed into competitive employment, 39% enrolled in a postsecondary institution, and 16% were transferred over to other public agencies.

(6) Support Services from Learning Specialists

In addition to the services of teachers, students, or paraprofessionals in the vocational classroom on a daily basis, handicapped students need assistance from learning specialists based outside the classroom. As with in-class assistance, the degree of support needed outside the classroom is directly tied to the size of vocational classes and teachers' specialized knowledge: students in small classes with teachers who are well trained in special education will need far less support from other personnel than will students in large classes taught by teachers who lack training in specialized education. Since the vast majority of mainstream vocational classes are fairly large, and are taught by vocational education teachers with little specialized knowledge about exceptional students, support services are a key element in quality mainstream vocational education. The programs we observed all had come to terms with the issue of support services. Since their financial and organizational constraints varied, each had solved the problem in a slightly different way. The major kinds of itinerant or auxiliary support services provided handicapped students in mainstream vocational education programs are the following: itinerant services from specialists in the vocational classroom, service from specialists in a learning lab or resource center close to the classroom, and service in the special education classroom. Some of the programs relied upon all three sources of service, while others concentrated on one approach.

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[10] This is $2,000 more than the average cost of educating a handicapped student at a BOCES for half the day over the course of a whole year, and nearly $1,000 more than the cost of educating a handicapped student in vocational courses at a comprehensive high school in New York for the entire day throughout the year.

[11] This includes wages for 44 out of 182 students served, at an average of $410 per stipend.

Specialists in the Vocational Education Classroom

Most of the vocational schools we visited employed specialists who spent at least some time in the vocational classes observing students, talking with teachers, and occasionally helping out in the classroom. In two cases the specialist spent a great deal more time in the classroom, and in each case the strategy has proved quite effective.

The specialist at Illinois's Decatur Area Vocational School teaches almost exclusively in the workshops, rotating to the classes where students are having the most trouble. He is assisted in this effort by two full-time teacher's aides, both certified teachers. Each of these professionals has major responsibility for eight to ten different classes at any time, so they serve a large population. Since there are no separate introductory courses at this school, the availability of in-class assistance is important.

A similar approach is used at Locklin Vo-Tech in Florida, where the specialist spends a fair amount of time in the practical setting with her students, going into the vocational labs when students need some special help. This activity was highly praised by the teachers, who felt that it gave her a better understanding of what the students needed to learn. Sometimes she used this time to learn particular skills herself so she could help the students practice them in the resource room.

In both Decatur and Locklin, the specialists are willing to help any student who needs assistance in the vocational class. As a result, they are not viewed as the "special ed teacher" and their students are not embarrassed by their assistance. Both the specialists and the vocational teachers at these centers feel this acceptance is important to the specialists' success.

The presence of the specialist in the vocational lab on an itinerant basis has benefits beyond the immediate learning of the student. For instructors who are receptive, in-class assistance from the specialist can also serve as training for the teacher in how to help a particular student. If the specialist can diagnose the student's learning style and respond appropriately, then the teacher can learn from that response as well. Having specialists in the classroom also facilitates the communication between special education and vocational teachers, a component so important that it is discussed separately in this chapter.

The more time the specialist spends in the classroom, the more labor intensive the task of providing support services. Locklin's specialist usually has responsibility for twenty-four to thirty students, with no more than fifteen at the school during either the morning or the afternoon session. The director of the Center feels that this is the maximum feasible load for this kind of instruction, leaving no time for transition activities or instruction of more students.

Learning Resource Centers

At most of the schools we visited, the specialists spend far more of their time in the resource room than in the vocational classroom. Often called the "learning resource center (LRC)," this room can be used as a study hall, a remediation lab, a place for students to "cool out," or a home room for support staff. Each LRC we visited served a slightly different mix of purposes, depending upon how the specialists defined their jobs and how the vocational teachers made use of the support services. In each case, however, the LRC was an important factor in the improvement of vocational education for handicapped students.

Excellent use is made of the resource center at Indian Valley Area Vocational School in Illinois, where the specialist in charge is a certified special education teacher with over five years of experience running JTPA programs in addition to her teaching experience. This resource room serves a variety of purposes, with major emphasis on its availability as a quiet place to work while the specialist helps students develop basic skills or learn material with which they are having particular trouble.

One of the strengths of this particular resource room is the flexibility of its services. The resource teacher follows a different strategy with each student, depending upon the student and the vocational class. Students in programs with a large academic component use the resource room as a study hall where help is available. If a student needs an isolated setting for taking a test or needs to have the test read by someone, the resource room is the place for that activity.[12] Vocational teachers can send students to the resource room with instructions for the specialist. The amount of time and number of days a student spends in the resource room will depend upon the help needed. When students come to the resource room, the specialist keeps track of how long they stayed, their activities, and their achievements; the specialist reports back to the vocational teachers about student progress.

Indian Valley's resource room has a very serious but warm atmosphere; students appear to feel very comfortable but also see it as a work environment. The room is located near the office, so the specialist can visit vocational classrooms while students are working in the lab.[13] Since any student can use the LRC by choice and teachers may send non-handicapped students as well as handicapped students there, students attach no stigma to the center and are very willing to be there. The specialist is very familiar with each handicapped student in the school, since she writes the vocational component of their IEP and maintains contact with special education teachers at the home school. This specialist is officially responsible for forty-nine handicapped students, half of whom are at the center at any one time; the actual number of students served does vary, since some of these needed no special services and since she also helps non-handicapped students.

Support Services from the Special Education Classroom

Some vocational schools and most comprehensive high schools have neither a learning resource center for the vocational program nor itinerant specialist services in the vocational classroom. In these settings, support services are supplied solely in the special education classroom. The difference between this system and the LRC system is that in this case the support services are given by a teacher who has both vocational and non-vocational students in the class. Unlike the LRC staff or itinerant specialists, special education teachers usually have had no special training in vocational education. Specialists are not only better trained to provide support services, but are able to learn more on the job because they can concentrate on the kinds of instruction which are applicable to vocational education. In some schools each specialist has responsibility only for students in particular vocational fields, a division of labor which permits them to better serve their clients. By contrast, special education teachers must respond to the needs of students for assistance in a wider variety of areas, as requested by a larger number of teachers.

Although we did visit some successful programs where support services were provided exclusively by the special education teachers, we know of many more where this

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[12] Sometimes a student who has been disruptive is sent to the LRC, but that student is treated as if sent for study hall rather than as punishment. The student does get a chance to cool out, but also receives some instruction.

[13] When the teacher leaves the room, it is monitored by administrative and teaching personnel in the office.

arrangement did not work well.[14] At the schools where this support system works well, the special education teachers have been able to adjust their teaching schedule so they have class time available for helping students with their vocational class assignments. If the teachers are expected to provide support services, but must spend five class periods a day teaching math, English, or other subjects, it is very difficult for them to provide any support other than to teach a general course of "vocational math" or "vocational English." The support services should be provided during a "resource room" class, so individual help can be given with particular problems, without interfering with the regular academic instructional program. Several of the teachers we spoke with felt that one teacher should be in charge of the resource room for the entire day, so that this teacher could become more familiar with the vocational class assignments and develop systematic approaches to teaching particular skills. However it is done, special education teachers providing support services must have adequate time in the teaching day to provide them and to learn about vocational education.

(7) Communication between Specialists and Vocational Teachers

Even when there is time in the day for special education teachers to assist vocational students with their work, special education departments often fail to provide appropriate support services to vocational students because there is a lack of communication between special educators and vocational educators.[15] This problem is greatly exacerbated when the special education teacher is located at a different campus than the vocational teacher.[16] In too many schools, it is up to the individual vocational instructor to contact the special education teacher for advice about a student or to ask that the student receive extra help connected to the vocational class. We did visit some schools where this pattern prevailed, and support services were provided because the vocational teacher was unusually energetic and the special education department was unusually interested. These successes notwithstanding, we should not design educational systems which depend so heavily upon unusual teacher initiative.

If special education teachers must provide support services, then some care must be taken to set up the flow of communications. The special education teacher and the vocational education teacher must communicate between classes or in writing about the services which are needed. The communication problem is worse when the vocational classes are at a different campus than the academic classes for handicapped students. In this case there must be a major time commitment to inter-school communications. Comprehensive schools pose less of a problem, since special education teachers and vocational teachers are located in the same school and are part of the same faculty. Support services can be greatly improved if the special education teachers receive assignment sheets for each student from the vocational teachers or if vocational teachers are asked to fill out check-up sheets for the special education teachers on a regular basis. In Norman, Oklahoma, the school district releases special education teachers one class period per day so they can visit Moore-Norman Vo-Tech on a regular basis. As a result, each special education teacher talks to each vocational teacher responsible for their students once a week despite their different teaching locations.

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14 See Barbara Beno, E. Gareth Hoachlander, et al, *Vocational Education Survey of Special Populations*, a report prepared for the Center for Educational Statistics, U.S. Department of Education, January 1987.

15 See Chapter 2 for an extended discussion of the communication gap.

16 The difficulties are nearly overwhelming in the California ROP system, where advanced vocational education is provided in a large number of sites throughout the district as well as in centers which may be outside the district.

The Sauk Area Career Center has recently lost its funding for on-campus support services, and its faculty attest to the superiority of locating support service on campus rather than in classrooms at feeder schools. After ten years of having access to support services from three special education teachers located at a learning resource center on campus, vocational teachers now must depend upon special education teachers at feeder schools in three different school districts to perform this task. The Center's teachers find it very difficult to contact other teachers during the teaching day. Although the Center and its staff are committed to serving special education students, there is not a concomitant effort by special education departments at the feeder schools, so no system has been set up whereby the two groups can communicate. Even if communications were better, there is no way that special education teachers can teach normal class loads at remote sites and still provide the kind of assistance that three specially trained teachers were able to provide when they had no other responsibilities and were located at the Career Center.

Rather than depending upon the individual vocational teacher to contact a special educator, there must be someone who organizes the flow of support services. This person must have easy access to the clients and all of the service providers, and must maintain good communications with each. We found that good communications often depend upon physical proximity and personal acquaintance. Even where these are present, communication cannot be taken for granted but must be designed into the system. Only very small schools appear to have excellent communications without a formal system for insuring this. It is more difficult to facilitate communications at a large school, especially at a vocational center with a number of feeder schools. The informal approach only works well where there are few clients and few other professionals serving them.

The problem of coordination is greatly reduced when there is one coordinator specifically assigned to that job. In every school we visited in Wisconsin, the special education department is able to provide support services more readily because the designated vocational instructor (DVI) can take responsibility for making the system work.[17] This coordination role is the main job of some DVIs, although others may also provide support services directly. Special needs specialists at California's ROCs are increasingly taking on the role of coordinator, due to the number of students and classes they must serve. We saw an excellent example of good communications at the Coastline Regional Occupational Center in California, where specialists see communication and coordination as their main function. The specialists describe their role as providing information which can help the teacher understand students' needs, communicating job and educational opportunities to students and their parents, developing employer contacts, and facilitating interaction between special educators at a students' home school and the ROC teachers. The three very committed specialists for approximately 300 high school students at Coastline ROC managed to maintain good communications with the home schools, where most support services must be provided. This excellent communication is undoubtedly part of the reason why over half of handicapped students students who complete vocational programs at Coastline are placed in jobs relevant to their training.

Figure 4-1 illustrates the communications flow surrounding an effective special needs coordinator in a large school or school district. In smaller schools or small school districts this pattern of coordination may not be appropriate. Staff in smaller organizations frequently fill more than one role, simplifying the coordination task although running the risk of overwork.

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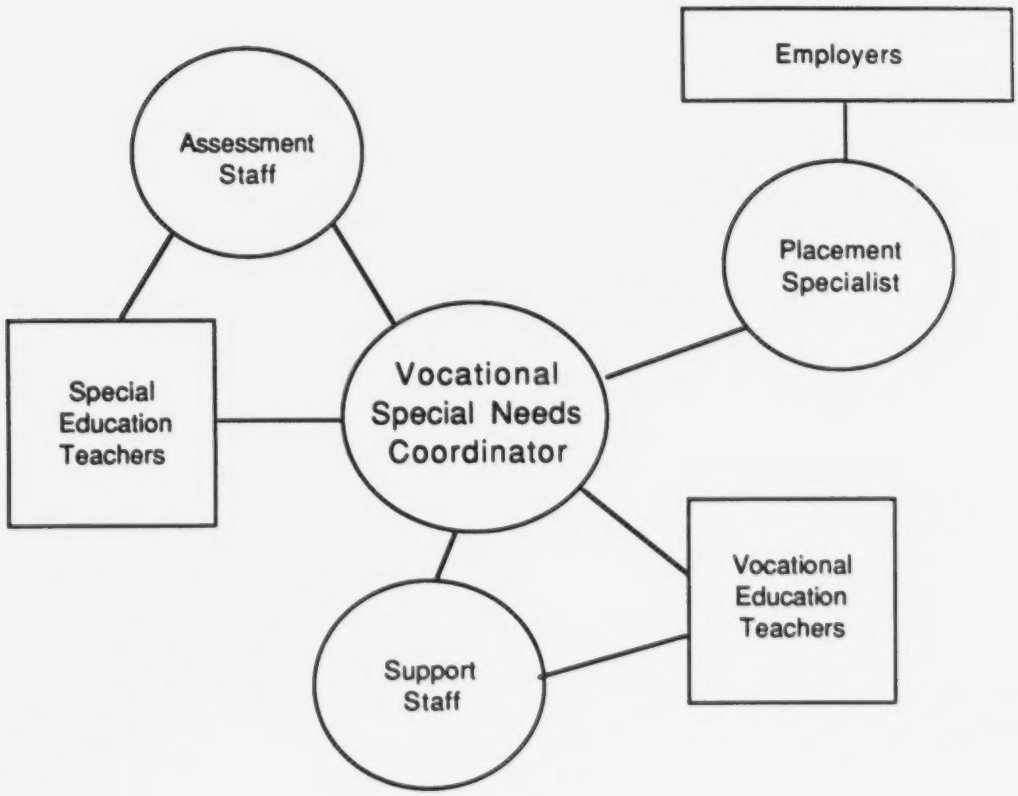
[17] The "Designated Vocational Instructor" program is a pilot program for coordinating special educators and vocational educators. The "DVI" is a special educator who has taken extensive summer training from state officials in techniques for assisting vocational instructors and handicapped students in vocational education. For a further discussion of the DVI program, see Chapter 5.

Figure 4-1

Coordination in a Model Vocational Education Program



The Cost of Support Services from Learning Specialists

The per student cost of a learning resource center and its specialists depends somewhat on the materials available through the center, but more heavily upon the specialists' duties. If the specialists are each responsible for more than fifty students, they will have to spend most of their time in the resource center and will communicate personally with vocational staff only about new students or problem cases. In this case the cost of staff time per student will run between $300 and $400. If the specialists are expected to spend much time in the vocational classrooms and coordinate very closely with each vocational teacher with regard to each student, then they can serve fewer students. Providing this level of support is of course expensive, costing the equivalent of one full time professional's salary and benefits for each twenty-four to thirty students enrolled for half a day at a vocational school. The cost per student will be around $1,000 for staff time alone. Despite the costs, this kind of support service is a very good way to introduce mainstreaming to a vocational school: vocational teachers are much more accepting of handicapped students if they feel there will be adequate help both in the classroom and to pull out students when needed.

When support services are provided in a special education class, the annual costs are the same as for any such class. This means that one-fifth of the teacher's salary is paying for support service to twelve students, assuming a five period teaching day and special education case loads of twelve students per teacher. If the special education teachers are not on the same campus as the vocational teachers, then some money must be allocated for coordination: daily release time for teachers, salary for a special needs coordinator, some specified portion of the special education supervisor's time, or some other arrangement. Without such arrangements the resource room does not usually function as a support service to the vocational class, so some sort of coordination effort must be budgeted. Providing support services during a special education class seems a less expensive way to provide services, because no additional staff must be hired. Yet the cost in such situations is close to $600 per student, just for the teacher's time in class. If the teachers are given a lighter teaching load in order to allow them to coordinate with vocational teachers, the cost increases by $125 per student, on average. Assuming that the instruction previously given during that time was also valuable, there are opportunity costs to providing vocational education related instruction during that time which must be accounted for in assigning that time to support services. It appears that offering support services through the special education classroom is less expensive only in appearance, not in reality.

The Importance of Coordinated Systems for Mainstream Vocational Education

Students in mainstream vocational classes need far more external support than do those in separate classes, due to the usual difference in class size and teacher qualifications. Unfortunately, in many schools too little external support is offered to make mainstreaming work for many of the special needs students; in other cases support services are not well coordinated with vocational instruction. When the level of support is low, or when that support is poorly coordinated with the vocational instruction, professionals outside the classroom can help only after a crisis attracts their attention. When support is higher and well coordinated with the course material, professionals outside the classroom can monitor student progress and function in a preventive mode rather than in a crisis mode. High levels of support and good coordination are essential characteristics of exemplary vocational programs serving handicapped students. These goals can be achieved through a variety of ways, but care must be taken in each case to insure that communication is achieved.

Observing mainstream programs in action, we concluded that there should be at least one person in each school who spends nearly all of his or her time trying to make mainstreaming work. Whether it is a vocational school or a comprehensive school, any school offering advanced vocational education should staff such a position. Since the cooperation of two different departments is not a natural outcome of school organization, the complete attention of one person is necessary in order to establish communication and cooperation between special educators and vocational educators. Depending upon the number of handicapped students enrolled in vocational education, this coordination role can be played by someone who also provides major support services or by someone who is a full-time coordinator. It is important that this person have training in both special education and vocational education, although a formal credential in both is not necessary. An understanding of both disciplines is important, and an appreciation for how they differ in perspective is essential to helping them work together. The special needs coordinator must have the technical knowledge of the special educator, but must understand the vocational program and its target work environments well enough that vocational teachers respect his or her judgement about student placement. Just as the best vocational teachers are unusually understanding of individual differences, the best special needs coordinators are unusually appreciative of the need to make greater demands on handicapped students in

order to prepare them for the world of work. To bring special and vocational educators together, coordinators must be able to bridge the perceptual worlds themselves.

(8) Administrative Support

Our visits to exemplary programs persuaded us that vocational programs do not provide quality training to handicapped students in all vocational fields unless there are school administrators very committed to this goal. This function might be performed by an administrative vice principal or the head of the vocational school itself. It is clearly not essential that the district as a whole share this objective, but without significant administrative support at the school level, the kinds of system elements noted in this chapter would not be possible.[18] Given the need for interdepartmental and inter-school cooperation, administrative leadership is even more essential to improving the employability of handicapped students than to most educational objectives. Where administrators put a priority on serving handicapped students in vocational education, both vocational and special educators in the district are more likely to see it as a priority. If the administrator can provide funds for special services and evaluate vocational teachers with regard to their role in the facilitating this effort, then he or she can have an impact beyond that of moral leadership.

Conclusion

An exemplary vocational education program should incorporate all of the elements shown in Figure 4-2. It would be a composite of efforts by the special education department, the vocational education department, employers, and a local community organization such as the vocational rehabilitation agency or mental health services bureau. These entities must work together much more than is common practice; professionals hired as "support staff" may provide the daily liaison function, but there must also be joint planning and in-service training if such a program is to succeed.

The vocational program must build upon the assessment, career exploration, and academic experiences provided in the junior high and early high school years. This prevocational time is the responsibility of the special education department and, if established, the assessment center staff. The result of these experiences should be a decision about placement for each student which reflects his or her interests and abilities. Although we expect that most mildly learning handicapped students interested in a vocational education will be placed into a special introductory vocational course, it is also possible to recommend placement into a modified vocational program for those students who will need continued special attention, or placement into a mainstream introductory vocational class for those who need very little support. In each case, the least restrictive environment should be chosen for that student. The placement decision should be made by a specialist who is also charged with the responsibility of monitoring that placement and intervening if necessary.

Once a student is placed in vocational education, the vocational education department must cooperate with the special education department in seeing that the student is well served in the chosen placement. If that placement is a separate introductory course,

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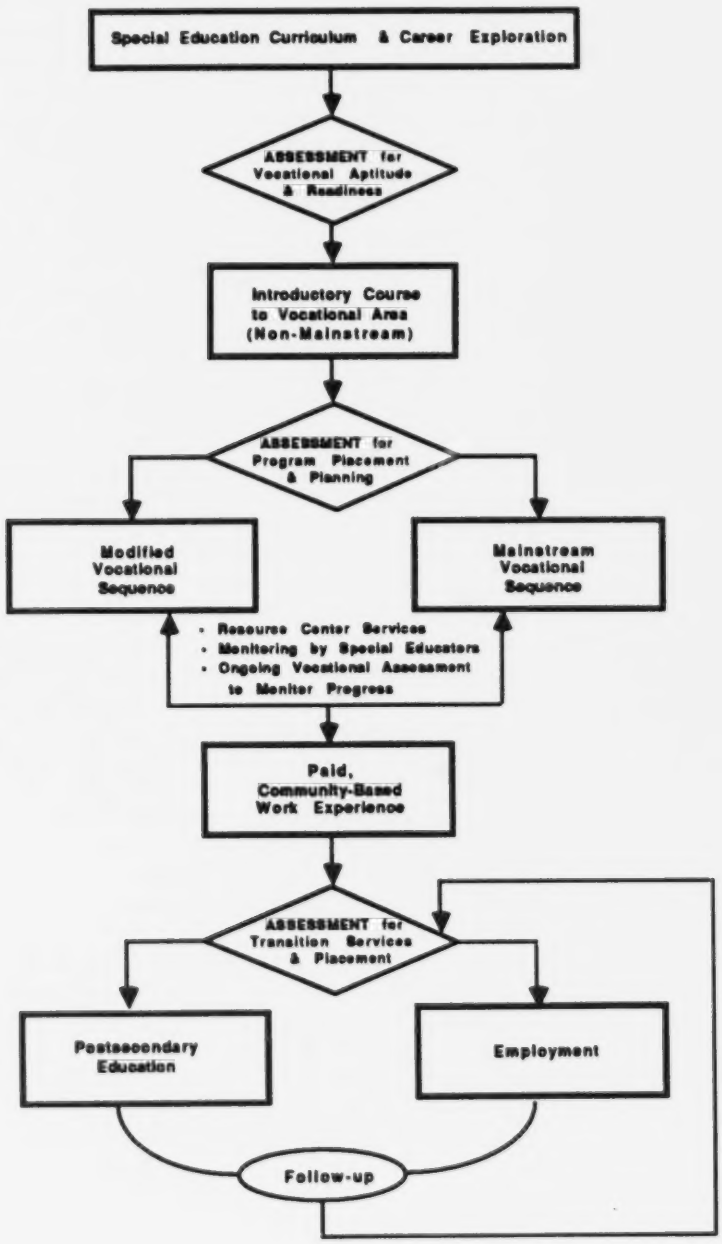
[18] District support must be sufficient to insure adequate funding, however.

Figure 4-2

Successful Vocational Program for Students with Mild Handicaps


Special Education Curriculum & Career Exploration
ASSESSMENT for Vocational Aptitude & Readiness
Introductory Course to Vocational Area (Non-Mainstream)
ASSESSMENT for Program Placement & Planning
Modified Vocational Sequence
Mainstream Vocational Sequence
• Resource Center Services
• Monitoring by Special Educators
• Ongoing Vocational Assessment to Monitor Progress
Paid, Community-Based Work Experience
ASSESSMENT for Transition Services & Placement
Postsecondary Education
Employment
Follow-up

then the vocational teacher should have ample time to learn about each student's abilities and to teach each student with appropriate techniques. The specialist assigned to each student's case can help the vocational teacher to reach that student, as well as to monitor that student's progress and to communicate with the special education teachers about appropriate assistance which may be needed. The progress of the student in this class will be used at year's end to determine whether the student should be placed in a separate vocational class or in a mainstream class for the vocational sequence which seems appropriate. This decision should rest with the same professional who has been monitoring the original placement.

When handicapped students attend mainstream vocational classes, the major responsibility for the occupational and employability training rests with vocational educators. In an exemplary program, the support staff also plays a major role. Support staff should be part of the vocational education department, but may well be trained in special education and perhaps should be also a part of the special education department. Support staff are responsible for seeing that students receive the special services they need, either by providing these themselves or making sure that special education teachers provide this assistance. In either case, support staff is in close contact with vocational teachers, and should be housed at the same facility. The support staff will have little occasion to assist students in separate classes, since these classes will be small and taught by those teachers most experienced with special needs students, perhaps teachers with extensive special education training as well as vocational certificates. For each student, whethermainstreamed or not, the professional who has placed that student should maintain communications with all personnel involved and monitor the student's progress.

As the student moves into the work experience component of a vocational course sequence, responsibility for that student will still be held mainly by the vocational educators who place the student and supervise the program. Vocational special needs support staff will be less important, but the services of counselors or job coaches will become important. The professional who has had responsibility for placing and monitoring this student during the high school years will coordinate with the work experience supervisors to keep special education teachers informed of their students' progress and aspects of employability skills which may need to be stressed in the classroom. Special educators should teach a unit on job finding as well. The vocational rehabilitation agency or mental services bureau may assist in the job coaching process. Local employers should also become involved in teaching students and communicating to the schools about their student trainees.

Before graduation, the IEP conference should focus on the transition process. Although special personnel should be hired to make job placements, the vocational and special education teachers should be involved at the transition conference in recommending placements. A representative of the local vocational rehabilitation agency should attend the transition conference as well. The conference should result in an effort by the placement specialist to place the student in an appropriate job or, if at all possible, in a postsecondary program. Job specialists should continue their involvement with each student for at least a year after job placement, counseling the student, monitoring the placement, and answering employers' questions. Job specialists will know the entire program has been a success when an employer asks for more of their clients when an opening occurs. As a school's vocational program more closely approximates this model for its mildly handicapped students, that sign of success should become more common.

CHAPTER 5

IMPLICATIONS FOR STATE AND FEDERAL POLICY

Many vocational education programs have made good progress in their effort to serve handicapped students during the past ten years. We observed some of the notable successes. However, there are still many programs which are not accommodating handicapped students well, and many more that are not serving them in the least restrictive environment. The attitudes of some vocational and special educators impede progress in this area: many vocational teachers still resent the extra burden of teaching students with special needs and many special education teachers are reluctant to relinquish control of their students to others. Some of the obstacles to progress, however, are actually posed by state and federal policies in vocational education or special education.

The recommendations presented here are aimed at removing such obstacles so that state and federal officials of vocational and special education will facilitate rather than obstruct local efforts to improve the employability of handicapped students through secondary vocational education. Federal directives should facilitate more than regulate. They should focus on the goal to be achieved while also assuring procedural accountability. State directives should require that local education agencies address the quality of both classes and services for handicapped students in vocational education, and encourage better coordination between the two. In addition, state funding should be adequate to make good programs possible and should support some kinds of functions entirely. While the provision of appropriate vocational education programs for handicapped students is the responsibility of local jurisdictions, we offer the following recommendations for reforming state and federal policy in this area.

What State Education Officials Can Do: Funding

Through funding, state policy can have a substantial impact on how well vocational education programs serve handicapped students. State funding policy can influence the quality of these programs in three ways: by increasing the overall level of financial support, by providing incentives for particular local activities, and by restricting the way state and federal funds can be spent. Each state must evaluate its own situation to determine its funding priorities. Through our observation of good programs and discussions with local educators, we learned about several ways state funding policy could be used to improve vocational education to handicapped students. The recommendations below are suggestions which state education departments should seriously consider as they shape their funding arrangements to the need for program improvement.

Provide more funding for education, especially vocational education

States are major actors in education funding. This is increasingly true in states like California, where the local ability to tax for education is limited by statutory and judicial decisions. Since good vocational education for handicapped students depends upon smaller classes and higher levels of support services, improvement in this area depends upon higher levels of funding as well. Several of the recommendations below concern funding for specific kinds of efforts by vocational and special educators, but there is a need for increased spending generally. If the "pie" of education funds is not increased, then new efforts in vocational special needs education can only be supported by taking funds from other programs. Such re-allocation will only deepen the resentment which many parents of non-handicapped students already feel about mandates in special education, and it is difficult to imagine which of the regular education programs to cut. We recommend higher

levels of funding for education generally, as well as higher levels of funding for efforts to improve vocational and special education.

In Oklahoma the state government has provided substantial support to special vocational education, and it has also made a large investment in modern area vocational centers. All advanced vocational education takes place at these centers, which have the latest equipment for each program area. Both separate and mainstream classes are held at the centers, which are excellent physical settings for providing vocational education to both youth and adults. In addition, the centers have close ties to the business community. This close connection has benefited all students—the program completion and placement rates are excellent for those with disabilities as well as for non-disabled students.

Provide funding for support services by special educators to vocational education students

Although state and federal vocational education funds can be used to supply support services to handicapped students in vocational classes, special education budgets should take into account the need to provide these services through the special education system. This arrangement is necessary for three reasons: (1) vocational education budgets rarely allocate sufficient resources to provide adequate levels of student support; (2) special educators are most likely to have the training needed to serve as support staff; and (3) providing support services through the special education system helps ensure high levels of coordination between the special education academic program and the vocational education program. State departments of special education should allocate, as they already do in some states, a substantial amount of money to help local education agencies pay for vocational special needs consultants, resource center staff, and itinerant support services as needed.

Provide funding incentives for reduced class size in vocational education

Class size is crucial because learning handicapped students, almost by definition, are those who need extra help. Separate classes for handicapped students, whether introductory or advanced, should be kept as small as their academic classes. We recommend that special vocational classes for handicapped students be no larger than twelve students.

Attention should also be paid to the size of mainstream classes, where the sheer size of the class is often an obstacle to serving handicapped students well. Quality suffers as student-teacher ratios reach above eighteen to one, even in otherwise excellent programs. In order to encourage local education agencies to reduce the size of vocational education classes, state funding formulas should provide greater assistance when mainstream classes have eighteen students or fewer when handicapped students are enrolled.

Florida's weighted funding system in its special education programs could be a model for vocational education funding. Under this system, a "handicap cost factor" is multiplied by the usual allocation, an attempt to reimburse schools for the full cost of educating each student. For example, in 1979 the cost factor for students with learning disabilities, mild behavior disorders, or mild retardation was 2.3 for special education instruction.[1] If this system were applied to students in mainstream vocational classes, this would make it financially more feasible for schools to limit the size of these classes.

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[1] Education Finance Center, Education Commission of the States, *Special Education Finance: The Interaction Between State and Federal Support Systems*, Report No. F79-3, September 1979, p.7.

Fund professional development in special vocational education

State departments of vocational and special education should fund and provide more in-service training for local educators. Oklahoma provides regional workshops in special vocational education, and Wisconsin recently held a series of workshops for administrators. State funds should be made available to pay workshop leaders and fund release time for teachers attending workshops.

Vocational teachers should be strongly encouraged in their own professional development, especially when that includes special education courses. Special education teachers should be encouraged to learn more about teaching career exploration and employability skills. Although teachers should be left to choose the exact nature of the courses they pursue for their further training, states could encourage colleges and universities to offer courses in special vocational education throughout the state and could reimburse teachers for their tuition costs in such courses.[2]

Encourage cooperation between special and vocational educators

In either the state department of vocational education or special education, at least one staff member should make interdepartmental cooperation a major mission. Recently, several states have added state transition coordinators using federal special education or state funds to support the position(s). As a beginning, this employee should ask school districts to explain how they are currently coordinating special education with vocational education and how students are tracked through both systems. A review of these efforts should lead to the sharing of results among similar districts and suggestions for improvement. States may wish to consider requiring each district to establish a position for interdepartmental coordination and providing funds for that position. This person would draw up and implement plans for joint program development by special and vocational educators, for tracking particular students so that both departments are able to serve them, and for coordinating special services to students in vocational programs.

Wisconsin's "Designated Vocational Instructor" program provides another example of how state funding can improve local coordination. Funded by state and federal money, this pilot program for coordinating special educators and vocational educators has been in effect for several years and is now in place in over one hundred school districts. The "DVI" is a special educator at each school who has taken extensive summer training from state officials and university faculty in techniques for assisting vocational instructors and handicapped students in vocational education. DVIs act as support staff and also coordinate services provided to vocational education students with handicaps. Although the DVI's release time from teaching is funded by the state, local autonomy is preserved because each DVI is free to define his or her specific role, allowing these professionals to decide how best to facilitate the vocational education of handicapped students in their schools. Since all DVIs have had a common training, their different approaches all lead to the same outcome: better coordination between vocational and special educators.

Encourage schools to coordinate with local rehabilitation agencies

As part of the transition effort, schools should coordinate with local rehabilitation agencies when they have clients in common. State education departments can fund projects

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[2] Direct reimbursement for tuition would have to be come from state or local funds. Neither the Perkins Act nor the Education for All Handicapped Act permit funds to be used for tuition, although it is possible to fund universities' efforts to teach in-service courses with money from these acts.

which facilitate such cooperation. One approach is to earmark special project money for local attempts to improve cooperation. New York's Cooperative Service Model provides funding for different approaches to coordinating special education, vocational education, and vocational rehabilitation. Another approach is to require coordination as a condition for participating in certain programs. California's Project Work Ability encourages coordination between special education, vocational education, rehabilitation agencies, and the state's employment department in this large work experience program for handicapped students. State level coordination between education and rehabilitation agencies may also be beneficial, since the state rehabilitation agency is then more likely to encourage its local representatives to cooperate with vocational education programs in their area.

What State Education Officials Can Do: Technical Assistance

State governments should perform those research, evaluation, coordination, and development functions which local education agencies find difficult or impossible to manage. In some cases, the financial investment to do a task is simply too large to ask of one school district. In other cases, local education staff lack the expertise to do it. These "technical assistance" chores are properly the jurisdiction of state education departments. Education officials in each state may have their own priorities for providing technical assistance, depending upon the progress already made and local economic conditions. The recommendations below stem from our experience in six states. They are examples of how technical assistance might be provided over and above state officials' availability for responding to local educators' questions.

Take the lead in developing competency based instruction in vocational education

Our observations of vocational programs made clear the value of competency based instruction in serving non-handicapped as well as handicapped students. Undertaking the design of a competency based vocational education curriculum is too large a job for local education agencies, but a state department of vocational education could provide the expertise and the funding for such a project. This has been done in Oklahoma, where the state vocational board mandated the implementation of individualized, competency based vocational education throughout the state. It is important that the system designed be individualized so students progress at their own pace, not simply a program where each unit is organized around student competencies and student competencies are listed at the end of the year. The state must take a strong lead in this area, or the job will not be done in the vast majority of districts.

Evaluate and develop guidelines for vocational assessment.

With the increasing federal emphasis on vocational assessment, many school districts are in doubt about the best way to institute an assessment program. Some have fallen prey to "vendor vultures" by purchasing expensive assessment packages, only to find that teachers do not know how to use the results obtained. In some districts, the federal setaside for handicapped students in vocational education has been devoted so heavily to assessment efforts that support services have been neglected. While vocational assessment is undoubtedly helpful, it is not clear how much vocational assessment is needed at what times. However, assessment is definitely needed at certain points in a student's education. (See Figure 4-2.) We found that assessment results are most useful when they serve as a guide for instructional services, but we did not find what type of assessment is best. State departments of vocational education should take on this task of helping educators develop, select, or modify vocational evaluation capabilities so that local education agencies can avoid wasting money that could be used to provide valuable

services. State officials are reluctant to choose from among vendors due to the obvious economic consequences for the companies, but we see no reason why states should be more reluctant to evaluate and recommend assessment tools than textbooks. Local educators would certainly appreciate some guidance in this area, and it is badly needed.

Collect and evaluate appropriate instructional materials

Although there are materials in vocational education which are designed for the learning handicapped student, most of the teachers we interviewed had not been able to find them. Most had designed their own materials; others simply worked with existing materials in spite of the difficulties. State departments of vocational and special education should cooperate in finding, evaluating, and compiling the adapted materials that are available and providing catalogues of these materials to local vocational education departments. Teacher-made materials could likewise be collected and evaluated, then included in the catalog. State officials can best perform this task, since they have the expertise and can make their time pay off for educators throughout the state. It would provide an important service for vocational teachers who would like to adapt their materials and recognition for those who already have done so.

Make it possible for small school districts to use setaside funds effectively.

Small school districts that are eligible for only small amounts of handicapped setaside funds often find they cannot use these resources effectively. They may even feel that the effort of reporting on their handicapped students is greater than the benefits.[3]

To address the problem of rural schools in Illinois, the state vocational education department is encouraging the development of sixty-one vocational education "regions" through which it will disburse state and federal funds. The regional organizations will enable local education agencies to pool their funds for better service provision and improved articulation between secondary and postsecondary vocational programs. The regional system permits economies of scale in funding and organizing special services. The state is gaining further efficiency because it will be better able to monitor the services of sixty-one regions than those of 750 school districts.

In order to facilitate coordination between vocational education and special education programs, we recommend that states encourage the use of regional organizations for the administering not only vocational education funds, but also special education funds. Regionalization is an important administrative step towards improving the effectiveness of the federal setaside, especially in states with rural populations.

What State Education Officials Can Do: Evaluation

In most states, the evaluation of special needs vocational education is inadequate because responsibility for this evaluation is not clearly assigned. With a few exceptions, most state departments of vocational education do not pay sufficient attention to the special needs component of their five-year school evaluations. This evaluation effort is a small part of a much larger evaluation and, in many cases, this portion is not a priority for either

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[3] In some states as many as half of the districts do not participate in the setaside program. Barbara Beno, E. Gareth Hoachlander, et al, *Vocational Education Survey of Special Populations*, a report prepared for the Center for Educational Statistics, U.S. Department of Education, January 1987, pp.28-29.

the special education or the vocational education department. States should more carefully examine the quality and improvement of the vocational program's service to handicapped students and connect this evaluation to financial support. In order to evaluate programs adequately, state departments of vocational and special education should consider the following recommendations.

Assign clear responsibility for evaluating special needs vocational education

It is imperative that state departments of education assign responsibility for this evaluation to a specialist within the vocational education department. This specialist will consult with the special education department in designing and implementing the evaluation. The more that special education departments get involved in funding and certifying vocational special needs personnel, the more responsibility they will have to take for the evaluation effort.

In cooperation with special educators, the Wisconsin vocational education department gives very strong guidance for local education agencies in the area of special needs education. The department has interpreted the Perkins Act as a prescriptive document requiring the State to take positive action on behalf of special populations. In addition to providing whatever vocational education is appropriate for a student, local education agencies are to provide notification, assessment, support services, guidance, and transition assistance to each handicapped student in vocational education. State officials require local education agencies to report their efforts in each of these areas; the state currently emphasizes notification and assessment, and expects all districts to demonstrate progress in these areas. The special needs component of the state's evaluation of vocational education is extensive, indicating the depth of state officials' concern with service to handicapped students. In addition, each school district with a Designated Vocational Instructor receives extra scrutiny from the special educators heading that program. The vocational and special education department have adopted the position that all students should have the same opportunities and has committed itself to seeing that Wisconsin's public schools make this a reality for each student.

Specifically evaluate support services to mainstream classes

Education officials must remind themselves that success in improving the employability of handicapped students depends upon the quality of support services as much as upon the quality of classroom instruction. As a result, the quality of support services to mainstream classes should be a major objective of any program evaluation. The number and type of students in mainstream classes should be considered in evaluating available services to determine whether there is a sufficient level of assistance available for these students. This evaluation should be a joint undertaking by the vocational and special education departments, since each will contribute a unique perspective and each should provide funds for support services.

Evaluate mainstreaming in vocational education

While there are certainly handicapped students who should not be mainstreamed in vocational education, there are more who would profit from the experience. Yet little organizational effort is put into seeing that these students are mainstreamed. An effort is needed, because there are many vocational and special educators who resist mainstreaming. Vocational educators may resist because they do not know how to adapt their classes and because they do not wish to change. Special educators may resist because they see that support services to the mainstream are inadequate and because they feel vocational teachers are poorly prepared to deal with handicapped students. In addition to correcting the

underlying problems of teacher attitude and quality of service which often prevail in the mainstream setting, state officials need to make a special effort to overcome lasting prejudices that keep students in restrictive settings. We suggest that part of the state's evaluation of vocational education include not only an evaluation of service to the mainstream student, but also the degree to which students are indeed mainstreamed into vocational education when that option is appropriate.

Collect data necessary for program evaluation.

We were surprised at how little most state education departments know about how well their vocational education programs serve handicapped students, particularly the mainstream classes. Vocational education departments may know the total number of students enrolled in various programs, and special education departments always know the number of handicapped students by age and handicapping condition, but these two data systems usually do not intersect. States should give serious consideration to collecting the kind of data that would allow them to tell whether handicapped students have good access to vocational programs in each school district, and to tell whether vocational programs in those districts are actually making these students more employable. The departments of vocational and special education in each state should cooperate in designing this data collection system and in seeing that it works.

Reward districts with high placement rates for handicapped students

Districts that are already succeeding with handicapped students and demonstrating their success through good placement rates should be rewarded for their achievement. Successful districts could be given additional funds for program improvement, perhaps targeted toward having these programs become "demonstration sites." Each state must determine what placement rates should be required for such privileges, as well as which regulations it is willing to suspend for good districts.[4] Such a program would enable states to focus their regulatory efforts on those districts which need to be monitored.

Self-Evaluation

Sometimes regulations adopted for good reasons have unintended negative consequences. State officials should do case studies and interviews sufficient to get feedback about unexpected as well as expected policy outcomes. In a number of sites, we observed examples of two types of unintended negative consequences, one from special education policy and one from vocational education policy.

Special education policy in many states has the unexpected outcome of encouraging more restrictive learning environments. We found instances where state special education funding systems actually rewarded districts for placing students in separate vocational education classes. Certainly the present system of tying special education funds to personnel costs rather than to student services has encouraged separate programs for handicapped students in comparison to support services for handicapped students in mainstream programs.

Where vocational education officials have tried to insure the quality of their programs through the use of high placement rates and high standards for completion,

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[4] By "placement," we include placement into related postsecondary education. We do not recommend that employment rates be used as the only indicators of program success, since the availability of suitable jobs varies greatly with the area. Placement measures can not be used in areas where the economy is severely depressed.

vocational education policy sometimes has the unexpected outcome of shutting out handicapped students. We found instances where strict interpretation of state regulations has prohibited vocational teachers from accommodating handicapped students. In some states the approved textbooks are too difficult for learning handicapped students to use, and there are state directives against using other materials. Although completion standards are set high for a good purpose—assuring quality graduates—there is an unfortunate result, because students with learning problems rarely complete such programs.

The intent of these regulations and funding mechanisms may well be sound, but the impact on handicapped students in vocational education has been detrimental. State vocational and special education officials must take the time to understand the impact of their own regulations, both intended and unintended.

What Federal Education Officials Can Do

Our recommendations for federal action concern funding and data collection. While we developed a clear sense of what needs to be done to improve the employability of handicapped students, we do not feel the federal government should directly implement particular program changes. We do feel, however, that federal funding regulations can either encourage or inhibit appropriate state and local action to implement such changes. Taking the actions recommended below will significantly increase the positive impact of federal funds on local efforts to accommodate handicapped students in vocational education.

Provide funds for experimentation in ways to coordinate vocational education with the efforts of special education, employers, and appropriate agencies

Since programs and organizations differ widely, there is no "one best way" to coordinate the efforts of vocational educators with other service providers. Some federal funding should be designated to support experimental efforts in this area, encouraging local education agencies to find ways to achieve this coordination. The results of such experimentation will help state and federal policy makers decide whether particular approaches should be recommended, reimbursed, or possibly even mandated. Funding for experimental approaches in coordination will be far more influential than mere exhortations to "coordinate" special and vocational education. Such exhortations are often equivalent to asking that overworked teachers add yet another task to the list of things they have no time to do.

The state of New York has undertaken an effort to fund experimentation by local districts. The "Cooperative Services Model" is an experimental program in coordinated services with considerable local freedom in implementation. The program seeks to find ways for special educators, vocational educators, and vocational rehabilitation counselors to work together with handicapped students during the transition from school to work. The Cooperative Services Model, jointly developed by the three state departments involved, has three major components during a student's high school years: provision of vocational assessment, provision of a comprehensive instructional program, and consistent placement/follow-up services. Each model site can develop its own program, provided that the model has these components, increases the coordination of services to students, and effectively improves their employability.[5] In a sense, the state is providing the funds

[5] The program was begun in three districts two years ago, and three more districts were added the next year.

for an experiment in how best to achieve the service coordination it desires. The state exercises control by evaluating the programs according to their success in achieving this state goal. While some states may follow New York's lead, we recommend federal funding for such programs so local districts interested in trying new forms of cooperation can get their efforts funded even when their state governments are not supportive.[6]

Relax restrictions on use of vocational education setaside funds and special education funds so support staff can also serve non-handicapped students with special needs

Support staff are more effective when they are allowed to help any student who needs assistance in the vocational class. When they must limit their clientele, they are viewed as the "special ed teachers" and students are often embarrassed by their assistance. While mainstreaming will not work without needed support services, it will not work well if students are stigmatized by participation in particular programs. Where support staff are most effective, they serve all special needs students, including those who are disadvantaged, limited English proficient, and others who are clearly at risk of dropping out of school. Successful specialists and the vocational teachers who are their colleagues feel the acceptance that results from serving a diverse group of students is important to the specialists' success.

Allow states greater flexibility in interpreting and implementing the excess cost provision in vocational education legislation.

The rationale for the excess cost requirement is a sound one, but its unintended consequence is lower quality of vocational education for many handicapped students. In their desire to demonstrate they are not supplanting federal funds for state and local funds, local education agencies are interpreting the excess cost provisions very conservatively. The requirement that setaside funds be used only for excess costs leads to situations in which handicapped students feel stigmatized: tutors are assigned to work only with handicapped students students in the class, the vocational resource lab can only serve handicapped students, only handicapped students are pulled out of class for vocational assessment, etc. Narrow interpretations of the excess cost requirement may also lead to situations in which the best solution to students' learning problems in a particular situation is not pursued because another strategy seems a safer use of the setaside: classes remain large while expensive vocational assessment packages are purchased, curriculum redesign for a mainstream course is not funded while teachers' aides are hired for in-class assistance, the problems of the many learning handicapped students remain untreated while equipment for the few physically handicapped students in a school are provided. Expenditures should be monitored to see that schools have not supplanted, but the principal guide to audit should be whether the funding increased the quality of vocational education to handicapped students, not whether the funding was used in specific ways.

Prohibit use of federal funds for teacher "overload" pay

As part of an effort to shift funding to mainstream classes and to reduce vocational teachers' burden, federal regulations should prohibit the use of federal funds to pay teachers for an "overload" salary during the regular school year and day. Local officials justify the overload system because it reduces teacher resistance to teaching handicapped students, but we feel this system encourages districts to withhold their full financial and institutional support for special vocational education. Since the teachers handle their usual

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[6] Another notable effort in coordination is California's Project Work Ability, described earlier in this chapter.

class load in addition to the special class, districts find it very easy to drop these efforts when federal funding shifts. Instruction of handicapped students should be integrated into the regular school budget and regular classes as much as possible; additional teachers should be hired to accommodate the full vocational program schedule.

Provide funds for summer programs through appropriate agencies

During our observation of vocational education programs, project staff were made familiar with a variety of summer programs for youth with disabilities or other disadvantages. Such programs, often funded through the Job Training Partnership Act or through vocational rehabilitation funds, can provide valuable opportunities for students to retain their vocational skills, to receive additional introduction to general employability skills, and to engage in career exploration. Some programs, usually geared to career exploration, are aimed at junior high school students. Some transitional programs are limited to older high school students. We learned about residential programs, weekday programs, and evening classes. In one case the students were actually paid to attend the classes. There is a wide range of suitable topics and formats for such programs, but they share three characteristics: (1) they are aimed at students with special needs, (2) they turn the long expanse of summer into a time of learning rather than a time of forgetting, and (3) they provide vocational education teachers with an opportunity to serve and understand their student better. Federal programs should continue to fund these kinds of efforts.

Fund stipends for work experience programs

Work experience should be an integral part of vocational education programs. This experience should include payment for work done after the first year of advanced vocational education. Paid work experience is especially important to improving the employment options of handicapped students, but in some cases employers may consider these students less desirable as intern candidates, due to their learning difficulties. In such cases a stipend or partial stipend may be necessary to attract employers to provide the student with a job. Federal funds could be provided to fund these stipends for a small proportion of handicapped students students in each district's work experience education program.[7]

Gather more accurate data on handicapped students in vocational education classes, their progress, and their transition

Many schools have no way of monitoring the enrollment or progress of handicapped students in vocational education, especially in mainstream classes. Most make little or no effort to follow up on graduates to see if vocational programs are working. Federal regulations should require districts to keep records of total handicapped enrollment in vocational education by setting; these records will indicate the amount of mainstreaming and can be used to design financial incentives for mainstreaming if desired. Schools should also keep records of overall completion rates for handicapped students in vocational education so federal and state officials can assess the effect of program changes. Finally, districts should be required to follow up on program completers for at least one year. Since employment or continuance in a related vocational education program is strong evidence of a program's success, schools should have reliable records of handicapped students' employment rates for comparisons over time, for comparisons with other schools, and for self-evaluation. These data collection efforts could be organized by either vocational

[7] In some areas, state law or labor agreements may limit the use of stipends.

education departments or special education departments, but will require close cooperation between the two in order to succeed.

Conclusion

This chapter is based on our visits to thirty excellent programs. The recommendations for federal action are aimed at removing unintended consequences and assuring program improvement. The recommendations for state action can be summarized as calling for appropriate funding, expertise, and evaluation. We have tried to keep these suggestions sufficiently general to be useful as situations change. The more specific suggestions should be used as examples of the sort of changes that can improve vocational programs. Each state must examine its own situation to see what steps it should take, but these suggestions should provide some direction for that inquiry.

CHAPTER SIX

CONCLUSION

This study demonstrated that some vocational programs are already serving learning handicapped students well. We were fortunate enough to observe exceptional vocational education teachers and special education coordinators, professionals whose combination of skill and empathy are cause for inspiration and hope. By interviewing and observing some good teachers, we learned more about what individual teachers can do to accommodate their students. We also learned that teacher efforts are only one part of what must be done to improve the employability of mildly handicapped students through secondary vocational education. In far too many schools, the quality of vocational education for handicapped students depends almost entirely upon the individual teacher. To achieve quality mainstream vocational education for students with mild handicaps, vocational teachers must be encouraged in their efforts by vocational administrators and these efforts must be supported and supplemented by special educators.

Local education agencies should encourage and reward teachers for their efforts, while encouraging others to develop similar abilities. This means that vocational education teachers should be encouraged to learn about accommodating special needs and special education teachers should be encouraged to learn about the vocational curriculum. In addition to helping teachers develop their skills, school districts must structure the teaching day and class size so teachers and support staff will have enough time and energy to pay special attention to those who need extra help. Reasonable teaching loads, in-service training, and administrative support can do much to improve the ability of vocational and special education teachers to serve learning handicapped students who wish to pursue a vocational program.

While improving the qualifications and working conditions of teaching personnel, local education officials must also design an overall system of program delivery that coordinates program admissions, student abilities, curriculum options, support services, and transition services. Such a system offers specific occupational training in the separate as well as the mainstream setting, courses sufficiently similar in content and approach that students may move between settings as their abilities develop. The curriculum is best organized as an individualized, competency based program with multiple exit points tied to specific occupational outcomes. We observed excellent programs that incorporated only some of these elements, but competency based systems have the greatest promise for accommodating a variety of students. Whether or not it is competency based, a good program will certainly do each of the following: provide appropriate support services to all vocational students regardless of setting, insure regular communication between vocational and special educators responsible for the same students, and teach social and employability skills in addition to occupational skills. In addition, a good program will prepare students for the transition from school to work through paid work experience, post-instruction assessment, job placement, and follow-up.

Local education agencies must take the major responsibility for improving the ability of vocational education programs to serve handicapped students. Although individual teachers can improve instruction in their classroom and individual principals can create conditions that make possible this kind of improvement, only school district administrators can facilitate inter-program and inter-school coordination. District vocational personnel are also in the best position to take charge of designing and rewarding professional development, operating work experience programs, providing job placement assistance, setting up assessment programs, and funding learning resource centers. District

special education administrators must take charge of such matters as developing appropriate prevocational curricula, establishing systems of communication between feeder school special education teachers and vocational school teachers, and developing a schedule of IEP conferences which examine and emphasize vocational education. Perhaps most important, district special education administrators should establish systems of regular communication among special education teachers, support staff, and vocational education teachers.

State governments must support local efforts through leadership in funding, expertise, and evaluation. The federal government should continue its role in funding as well. Both state and federal policy makers must evaluate the consequences of their own policies to be sure that the unintended consequences do not threaten program improvement.

Although much remains to be done in vocational special needs education at all levels of government, our research demonstrates that these programs can succeed. Students with mild learning handicaps can indeed be mainstreamed in most cases, and they can acquire the vocational and employability skills needed to enter the work force. Our observation of excellent programs provides cause for optimism, but educators must remember that substantial resources must still be allocated to bring most vocational programs up to the level of those we visited. We hope that this report provides some direction to those who must find and direct those resources.

APPENDIX A

RESEARCH METHODS AND UNITS OF ANALYSIS

The study focused on six states: California, Florida, Illinois, New York, Oklahoma, and Wisconsin. These particular states were selected because together they offer a large number of programs from which to choose in a great variety of settings.[1] In addition, these states provide a variety of approaches to the state's role in vocational education and to the delivery of vocational education to handicapped students. In order to learn about these approaches, the project staff reviewed state publications and interviewed state officials of vocational and special education. We asked these officials about state policies relating to vocational education for students with handicaps. We also asked them to nominate programs for our study of model approaches in providing occupationally specific vocational education.

Table A-1

Handicapped Children Ages 6-17 Served in Six States, 1983-1984[2]

	All Handicapped	Learning Disabled	Mentally Retarded	Emotionally Disturbed	All Learning Handicapped
California	326,670	193,197	19,342	7,970	220,509
Florida	137,570	56,243	18,792	14,972	90,007
Illinois	195,339	85,697	27,725	19,253	132,675
New York	223,895	125,682	23,065	32,571	181,318
Oklahoma	56,684	27,360	10,723	1,007	39,090
Wisconsin	59,889	26,866	9,546	9,233	45,645
All U.S.	3,634,049	1,693,904	550,759	298,617	2,543,280
6 States: % of U.S. Totals	27.52%	30.41%	19.83%	28.47%	27.89%

Selection of Programs for Study

To obtain an adequate level of detail, we concentrated on thirty occupationally specific vocational education programs, together with their related courses or services. Given the difficulty of obtaining valid and comparable data between states on access and completion rates, we selected programs for study according to a process of nomination and qualification. An initial list of exemplary programs was developed through a process of nomination by state vocational education personnel, and state special education personnel.

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[1] California alone accounts for nine per cent of the handicapped students ages 6-17 served in the public schools; together, these six states serve 28% of the handicapped students in American public schools: 30% of the learning disabled, 20% of the mentally retarded, and 28% of the emotionally disturbed. See Table A-1.

[2] Calculated from Delmisch, Appendix A, p.129. Original source: U.S. Department of Education, Office of Special Education and Rehabilitative Services, *Seventh Annual Report to Congress on the Implementation of the Handicapped Act*, Table 6A4, 1985.

We asked our informants to identify occupationally specific, vocational education programs, approved under the State Plan for Vocational Education, offered in grades 10 through 12. Such a program is a planned sequence of courses, services, or activities designed to meet an occupational objective. The objective had to be in one of seven major areas: agriculture, distribution, health, trade and industrial, technical, office, or occupational home economics.[3] The programs selected were to be among those serving handicapped students in the special or regular classroom as described above. In selecting exemplary programs for our consideration, we asked our informants to select programs which met one or more of the following criteria: (1) a high rate of program completion for mildly mentally retarded, learning disabled, and/or emotionally disturbed students; (2) for these students, a high rate of placement in appropriate jobs or for these students, a high rate of placement in further education; (3) employer satisfaction with such students who have been enrolled in the program. We were not especially concerned with finding programs with high handicapped enrollment, which is an appropriate measure of access, but with finding those programs which had been successful with handicapped students. State officials suggested particular schools, school districts, supervisors, and occasionally teachers for us to contact about exceptional programs.

Taking the suggestions of state officials as a starting point, we interviewed school officials and teachers on the telephone in order to identify particular vocational curricula which had been especially successful with handicapped students and the educational setting of those programs. We decided that we would visit only those programs which claimed to maintain accurate data on the enrollment, completion, and placement of handicapped students, and who could assure us that during the past three years, at least two handicapped students per year had successfully completed the program requirements. An exception to this rule was made when a program was so notable and so new that we felt it deserved inclusion despite its short track record. An exception was also made in the case of a very difficult curriculum which had an excellent placement rate for handicapped students in areas related to their vocational training, but in which the state mandated standards for completion were so difficult that the completion rate was very low for non-handicapped students as well as for handicapped students.

By talking to school officials and teachers, we were able to find thirty programs at over two dozen different schools which we felt confident were doing an exceptional job with mildly learning handicapped students in at least one vocational course sequence. In several cases we decided to visit more than one occupational program at a school site, and two sites had to be dropped from the study due to scheduling difficulties. The thirty programs we selected for intensive study are not necessarily the best in the nation, but each is performing notably on several dimensions. Given the lack of knowledge about their quality at the state level, we had come to believe that doing an exemplary job in vocational education with handicapped students, especially in an unrestrictive learning environment, was an even more notable and unusual achievement than we first had thought. By choosing a variety of programs in a variety of settings, we hoped to determine the essential elements as well as the less essential elements in such programs. Furthermore, we would be able to observe the ways in which local differences could be accommodated and a quality program still provided.

The pool of programs eventually selected is described in Table A-2. They varied widely in urbanicity, school setting, and curriculum. The thirty programs visited were located in twenty-three different schools. Thirteen of these were vocational schools, nine

[3] Note that consumer homemaking and industrial arts programs were not included.

Table A-2

PROGRAMS STUDIED

School	State	City	School Type	Program	Learning Environment	Community Type
Mission Trails ROP/C	California	Salinas	Vocational	Food Service	Mainstream	Suburban
Sequoia High School	California	San Mateo	Comprehensive	Construction Carpentry	Mainstream	Urban
Coastline ROP/C	California	Costa Mesa	Vocational	Food Service	Mainstream	Sub-Urban
Coastline ROP/C	California	Costa Mesa	Vocational	Proof Operator	Mainstream	Sub-Urban
Fountain Valley High School	California	Huntington Beach	Comprehensive	Graphic Arts	Mainstream	Sub-Urban
Locklin Vo-Tech Center	Florida	Milton	Vocational	Plumbing	Mainstream	Rural
Robert Morgan Voc. Tech. Institute	Florida	Miami	Vocational	Small Appliance Repair	Mainstream	Suburban
Miami Jackson High School	Florida	Miami	Comprehensive	Commercial Foods	Mainstream	Urban
Miami Jackson High School	Florida	Miami	Comprehensive	Small Appliance Repair	Mainstream	Urban
Miami Jackson High School	Florida	Miami	Comprehensive	Commercial Foods	Separate	Urban
Miami Jackson High School	Florida	Miami	Comprehensive	Small Appliance Repair	Separate	Urban
Decatur AVC	Illinois	Decatur	Vocational	Auto Body	Mainstream	Rural/Sub.
Eisenhower High School	Illinois	Decatur	Comprehensive	Small Engine Repair	Mainstream	Rural/Sub.
Indian Valley Area Voc. Center	Illinois	Sandwich	Vocational	Auto Mechanics	Mainstream	Rural
Sauk Area Career Center	Illinois	Crestview	Vocational	Child Care	Mainstream	Urban
Sauk Area Career Center	Illinois	Crestview	Vocational	Nursing Assistant	Mainstream	Urban
East Alton-Wood River High School	Illinois	Wood River	Comprehensive	Machine Shop	Mainstream	Suburban
Curie High School	Illinois	Chicago	Comprehensive	Woodworking	Mainstream	Urban
New York School of Fashion Industries	New York	New York	Vocational	Retail	"Modified"	Urban
Clara Barton High School	New York	New York	Comprehensive	Dental Assistant	"Modified"	Urban
FLEX	New York	New York	Alternative	Food Service	Separate	Urban
Putnum-North Westchester BOCES	New York	Yorktown Heights	Vocational	Health Assistant	"Modified"	Suburban
O.T. Autry Vo-Tech	Oklahoma	Enid	Vocational	Institutional & Home Services	Separate	Rural
Francis Tuttle Vo-Tech	Oklahoma	Oklahoma City	Vocational	Building & Grounds Maintenance	Separate	Suburban
Francis Tuttle Vo-Tech	Oklahoma	Oklahoma City	Vocational	Commercial & Home Services	Separate	Suburban
Moore Norman Vo-Tech	Oklahoma	Norman	Vocational	Child Care	Mainstream	Suburban
Moore Norman Vo-Tech	Oklahoma	Norman	Vocational	Auto Body	Mainstream	Suburban
Edgerton High School	Wisconsin	Edgerton	Comprehensive	Technology	Mainstream	Rural
Lake Mills High School	Wisconsin	Lake Mills	Comprehensive	Home Economics/Foods	Mainstream	Rural
Beloit High School	Wisconsin	Beloit	Comprehensive	Food Service	Mainstream	Suburban

were comprehensive high schools, and one was an alternative high school. Of the twenty-three schools, six were located in very urban settings and five in very rural settings. The remaining eleven offered at range of suburban settings, from nearly urban to nearly rural. Of the thirty programs visited, twenty-one were programs in which handicapped students were mainstreamed during the advanced vocational courses, six were separate programs run especially for handicapped students, and three were programs with a substantially modified pace of learning into which any student who needed a slower pace could be placed. A variety of curricula were represented, nineteen in all. Seven of the programs involved food service training and three involved small appliance repair. We also visited two programs each in the areas of auto body, child care, commercial home or institutional services, and health assisting. We visited one program each in construction carpentry, graphic arts, building and grounds maintenance, proof operator skills, auto mechanics, machine shop, woodworking, plumbing, the retail garment trades, dental assisting, and occupations in high technology. Table A-2 shows the location and characteristics of the thirty programs studied in depth. In addition to these, half a dozen other programs were visited for briefer periods of time.

Data Collection

Once programs were selected for study, a teacher or administrator at the site returned a short questionnaire asking about the vocational course sequence, special services, and follow-up efforts targeting handicapped students at that site. In addition, project staff spent at least a day at each site in order to learn about the program. The personnel interviewed varied somewhat from site to site, but the staff interviewed vocational education teachers for each program selected for study. In addition, the staff interviewed personnel in charge of the special services at each school, and often district level vocational and special education officials as well. In many cases school principals or vice principals were included, in addition to some counselors, special education teachers, and assessment staff. We interviewed whoever was necessary in order to get a comprehensive picture of the program and supportive services, and in each case this meant a somewhat different list of personnel. A very common set of respondents for these case studies consisted of one or more classroom teachers, the school principal, a special education supervisor, and a special education teacher or specialist.

At each site project staff arranged to observe a class in the vocational sequence which had been nominated for its exemplary practices. The teacher in charge of that class was interviewed at length, and in some cases the teacher's department chair, colleagues, or assistants were interviewed as well. We asked the teachers to describe their classes and students, the modifications they made in order to accommodate handicapped students' needs, the teaching materials used in the class, their classroom operating policies, the special services received by their handicapped students, and so on. The project staff took the attitude that these teachers, since they have had unusually good rates of success with handicapped students, were our best experts on what classroom strategies were most effective with their handicapped students and on which of the special services those students received were of the greatest importance to these students' increased employability.

The administrators, supervisors, and specialists at each site were queried about the kind of prevocational curriculum experienced by handicapped students in the vocational program, the course sequence in the vocational curriculum, support services provided to handicapped students in vocational courses, special instructional materials and teaching strategies used with handicapped students in vocational courses, transition services offered to these students, employer and parent involvement in the vocational program, staff

communications, and so on. In addition, someone at each site was asked for data on the enrollment, completion, and placement of students for this vocational program, as well as for information on the extra costs of providing the modifications and services provided for handicapped students in the program. By the end of the day, we had a clear picture of the vocational program as it is typically experienced by the student who enrolls in the vocational sequence we had come to visit, from career exploration and assessment during the junior high school years or early high school years to whatever job placement and follow-up that student might receive after leaving the secondary school. In addition, we understood the vocational teacher's approach in the classroom and the population being taught there.